

**REPORT OF FINDINGS FOR  
CONTINUED SUBSURFACE INVESTIGATION AT  
FORMER UNDERGROUND STORAGE TANK AREA  
FOR USTs #2, 3 and 4  
BLUE LAKE FOREST PRODUCTS  
1589 GLENDALE DRIVE  
ARCATA, CA  
LOP #12196**

June 2006

Prepared for:

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Project No. 00-1428-03.11400

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## 1.0 INTRODUCTION

Winzler & Kelly Consulting Engineers (Winzler & Kelly) has prepared this Report of Findings on behalf of Blue Lake Forest Products for submittal to the Humboldt County Division of Environmental Health (HCDEH) for review. This report presents results of continued subsurface investigation activities including borings installation on April 25 and 26, 2006 and May 15, 2006, and monitoring well installation on May 17, 2006.

A Workplan Addendum to the January 2004, *Workplan for Soil Remediation at Former Underground Storage Tank Area for UST's #2, 3, and 4* was prepared in response to a November 7, 2005 letter from HCDEH recommending installation of monitoring wells within 20 feet downgradient of the identified areas of soil contamination. Then, in response to a phone conversation on March 15, 2006 between Winzler and Kelly and the HCDEH, the March 17, 2006 *Workplan Addendum #2 for Installation of Four Borings and an Additional Monitoring Well* was prepared to assist in defining the boundary of the groundwater TPH-D plume. In a letter dated March 21, 2006, HCDEH approved the scope of work proposed in the Workplan and the Workplan Addendums. A copy of the November 7, 2005 and March 21, 2006 letters are included in Appendix A.

This Report provides the information obtained during the implementation of the Workplan Addendums dated February 28, 2006 and March 17, 2006, which consisted of the installation of four (4) borings and two (2) monitoring wells to assist in defining the downgradient extent of TPH-D impacted groundwater.

## 2.0 SITE CONCEPTUAL MODEL

### 2.1 Site Location and Facility Description

Blue Lake Forest Products is located at 1589 Glendale Drive, in Glendale, California. Glendale is an unincorporated area located immediately north of Highway 299, approximately two miles west of Blue Lake. Most of the mill complex is located along the north side of Glendale Drive, with several buildings located along the south side of Glendale Drive (See Figures 1 & 2, Appendix B). Note that the parcel containing the former Dip Tank Building and USTs 2, 3, 4 area was sold by Blue Lake Forest Products to Bob Sholes, and subsequently by Bob Sholes to Gary Johnston.

### 2.2 Environmental Site History

Between the years of 1989 through 1990, eight petroleum underground storage tanks (USTs) were removed from four separate locations around the Blue Lake Forest Products (BLFP) mill site (See Figure 2, Appendix B). Several overexcavation and soil remediation activities were initially performed by the American Environmental Management Corporation (AEMC) in and around the former UST locations (See Figure 2, Appendix B). On September 1, 1998, NCI removed USTs #2, 3, and 4, three 10,000-gallon diesel USTs. The results from these activities were previously submitted to the North Coast Regional Water Quality Control Board (NCRWQCB), in reference to case #1NHU527. The HCDEH subsequently assumed lead agency status for the UST investigations, as referenced under LOP#12196. In a letter dated November

16, 1999, the HCDEH requested a Workplan to determine the extent of petroleum related impacts to the four separate UST locations on this site.

*A Workplan for the Initial Hydrogeologic Investigation of USTs #1-8, Blue Lake Forest Products* was prepared by Winzler & Kelly Consulting Engineers and was submitted to the HCDEH in January 2000. The Workplan proposed collecting and analyzing soil and groundwater samples from borings around each of the four UST areas. The Workplan was implemented in June 2000, as summarized in *the Report of Findings Hydrogeologic Investigation of USTs #1-#8*, dated October 2000. Upon review, the HCDEH requested an additional workplan to address remaining hydrocarbon impacts to portions of the site, specifically they concurred that additional investigation should be conducted to define the lateral and vertical extent of contamination in the vicinity of the former USTs #2, 3, and 4.

In June 2001, the Workplan for the continued *Hydrogeologic Investigation of USTs #1-#8, Blue Lake Forest Products* was prepared by Winzler & Kelly Consulting Engineers and was submitted to the HCDEH.

The Workplan was implemented on August 11-12 and 15, 2003, in an effort to define the extent of hydrocarbon impacted soil and groundwater in the vicinity of the former USTs #1, 2, 3, and 4. A summary of results are found in the *Report of Findings Hydrogeologic Investigation of USTs #1-4*, dated November 2003.

In a letter dated December 15, 2003, the HCDEH requested a Workplan for over excavation of the impacted soils and installation of monitoring wells around Tank Hold #2-4. The *Workplan for the Soil Remediation at the Former Underground Storage Tank Area for UST's #2, 3, and 4* was completed in January 2004, and approved by the HCDEH in a letter dated January 23, 2004. A Workplan Amendment, consisting of a reduction of the proposed excavation was written in April 2004, and approved by the HCDEH in a letter dated April 21, 2004. Workplan Amendment #2, consisting of changes in the soil disposal method to onsite soil treatment, was approved in a letter dated June 9, 2004. Winzler & Kelly implemented the January 2004 Workplan by excavating impacted soils during June 14 through July 2, 2004. Four Monitoring wells were installed on November 22 to November 23, 2004.

### **2.3 Site Geology and Hydrogeology**

Well drilling records indicate that the mill area is typically underlain by several feet of gravel fill. The substrate, to depths of 30 to 40 feet, appears to consist of interbedded clays, silts and sands, generally as a clayey mix, with interbeds of gravels-cobbles. Silty sands are variously described as gray, brown and black. Clays are commonly described as gray, greenish, and rusty orange (iron stained), with some organic rich clays noted in the flatter site areas. Gravels are described as rounded and/or fractured. The substrate in this area may represent old river terrace deposits and/or valley alluvium.

Noisy/Mill and Hall Creeks flow southward out of the foothills and converge into Mill Creek approximately 1,500 feet east of the mill site and just north of Glendale Drive. Mill Creek then continues southwesterly towards the Mad River, passing about 550 feet southeast of the mill site. Lindsay Creek is located approximately 2,500 feet to the north and northwest. All creeks and drainage courses in the area flow south-westerly into the Mad River channel, which is located

about 1,100 feet southwest of the mill. Surface drainage across the mill site is typically to the south, towards the Mad River.

During implementation of the initial Workplan in June 2000, groundwater levels in the exploratory borings were measured for each of the investigated areas. The June 2000 depth-to-water levels encountered in the borings generally ranged from 7 to 13 feet below ground surface (bgs). Previous monitor well records across this site indicate that seasonal lows in water depths may approach 33+ feet bgs. During implementation of the *Workplan for the Soil Remediation at the Former Underground Storage Tank Area for USTs #2, 3, and 4* dated January 2004, groundwater levels in the excavation were encountered at 12 feet bgs. Quarterly monitoring of onsite wells indicate depth to water between 3.73 and 12.05 feet bgs. Based on quarterly monitoring data collected from the on-site monitoring wells, the groundwater gradient averages approximately directly south at an average slope of 1.60 ft per 100 feet (see Table 5, Appendix C)

#### **2.4 Changes in Distribution of Chemicals**

Underground storage tank holding area for USTs # 2, 3 and 4 formerly held three 10,000 gallon diesel USTs (See Figure 3, Appendix B). The tanks were removed by NCI on September 1, 1989. Soil from the common tank hold was subsequently overexcavated, remediated and disposed onsite under approval of the NCRWQCB. Excavation of the common tank hold ranged between 3 and 15 feet below ground surface (bgs). AEMC installed borings B-1, B-2, and B-3 in 1990 through the former tank pit. TPH-D was reported in the soil in all borings at levels up to 903 ppm. No groundwater sample results were reported for these borings.

Eight borings (B2-1 through B2-8) were drilled around the perimeter of the tank hold in June 2000. Soil and groundwater samples were collected and the analytic results were reported in the October 2000, *Report of Findings*. All of the borings except B2-3 indicated positive hydrocarbon impacts to the groundwater (See Table 1, Appendix C). Also, with the exception of boring B2-3, all of the borings indicated some positive response for hydrocarbons in the soils (see Table 2, Appendix C).

The Continued Hydrogeologic Investigation was conducted in August 2003 to attempt to fully delineate the soil and groundwater impacts in the vicinity of the tanks. Groundwater samples taken from borings B2-12, B2-12A, B2-12B, B2-12C and B2-13 contained concentrations of TPH-D at 30,000 ppb, 150,000 ppb, 2,100 ppb, 6,800 ppb and 31,000 ppb, respectively and concentrations of TPH-G at 200 ppb, 300 ppb, 220 ppb, 120 ppb and 220 ppb, respectively (Table 1, Appendix C). Total lead was detected in all of the August 2003 borings at concentrations up to 1,500 ppb. Borings B2-12B and B2-12C were run for dissolved lead (sample is filtered through 0.45 micronfilter prior to analysis) and total lead. The dissolved lead results were below the detection limit of 10 ppb for both samples and were 170 and 850 ppb for total lead, respectively. MTBE was not detected in any of the groundwater samples collected during the boring installation.

Also as part of the August 2003 hydrogeologic investigation thirty-three soil samples were collected from borings B2-9, B2-10, B2-12, B2-12A, B2-12B, B2-12C, B2-13 and B2-13A. Soil samples were collected at five, ten, fifteen and twenty feet bgs. The soil samples collected during construction of borings B2-9, B2-10, B2-13 and B-13A did not report any of the tested constituents at concentrations above laboratory detection limits. The soil samples collected from borings B2-12,

B2-12A, B2-12B and B2-12C at a depth of fifteen feet bgs contained concentrations of TPH-D at 150 ppm, 8.5 ppm, 5.0 ppm and 170 ppm, respectively. The soil samples collected from borings B2-12A, B2-12B and B2-12C at a depth of twenty feet bgs contained concentrations of TPH-D at 900 ppm, 600 ppm, and 180 ppm, respectively (Table 2, Appendix C). Benzene, toluene, ethylbenzene, xylenes and MTBE constituents were not reported in any of the soil samples collected during the boring installation. Boring locations are shown on Figure 3, Appendix B and soil analytical results are presented on Table 2, Appendix C.

The November 2003 *Report of Findings for the Hydrogeologic Investigation* concluded:

- Fairly extensive diesel impacts remain in the soil around Tank Hold 2-4 with concentrations up to 3,400 ppm.
- The soil impacts around Tank Hold 2-4 have been defined in the southwest, west, north, and easterly directions. Impacts in the southeasterly and southern directions have not been fully defined.
- Diesel impacts to the groundwater around Tank Hold 2-4 were reported up to concentrations of 150,000 ppb.
- Groundwater impacts around Tank Hold 2-4 have been defined in the southwestern, west, north, northeast and eastern directions. The plume remains to be defined in the southern and southeasterly directions.

Winzler and Kelly excavated 3,400 C.Y. of impacted soil during June 14 through July 2, 2004. The extent and depth of excavation is shown on Figure 4, Appendix B. Figure 5, Appendix B, illustrates soil sample locations collected during excavation. The proposed cleanup level was 1,000 ppm TPH-D. Due to the proximity of the onsite building, excavation was not performed within 5 feet of the buildings and depth was limited adjacent to the building, to prevent destabilizing the structure. Soil adjacent to the building did not meet remediation goals and reported contamination as high as 3,400 ppm. Soil analytical results for soil samples collected during excavation are included in Table 3, Appendix C.

Four monitoring wells were installed onsite on November 24 and 25, 2004, Figure 6, Appendix B. The analytical results from the soil samples collected during installation of monitoring wells are summarized on Table 2 in Appendix B. The soil samples collected from monitoring wells MW-12 and MW-13 at a depth of 15 ft contained TPH-D at concentrations of 4,100 ppm and 610 ppm, respectively. Quarterly monitoring has shown groundwater contaminant levels have been declining since the initial December 2004 sampling event (Table 4, Appendix B).

## **2.5 Potential Sensitive Receptors**

A Sensitive Receptor Survey was completed for this site in May 2005. Five (5) parcels within the survey area had wells identified on the property; however, only two are currently used and both of these are used for irrigation purposes. Another Sensitive Receptor identified near the subject site was Hall Creek. Of the potential sensitive receptors identified, none is known to have been affected by impacted groundwater originating at the subject site and only Hall Creek poses significant potential for becoming impacted in the future.



## **2.6 Issues Remaining to be Addressed**

Issues which remain to be addressed include the following:

- Define the downgradient boundary of the groundwater TPH-D plume.
- Subsequent Quarterly Monitoring Events to evaluate the effectiveness of previous soil remediation measures at the site and to confirm no offsite migration of TPH-D contaminated groundwater.

## **3.0 FIELD ACTIVITIES**

The objectives of the scope of work was to delineate the downgradient extent of TPH-D contaminated groundwater by installing four borings and one monitoring well downgradient of the remaining source, and one monitoring well immediately adjacent to the previous excavation boundary. Prior to initiating or implementing any of proposed drilling activities at the site drilling permits were obtained from the HCDEH (see Appendix A).

The following tasks were performed by Winzler & Kelly, and/or Mitchell Drilling Environmental Corp. of Eureka, CA. (C57 License #672617), during the field activities associated with the implementation of the Workplan.

On April 25 and 26, 2006, Winzler and Kelly installed four borings south of the Dip Tank Building (Figure 7, Appendix B). B2-14 and B2-15 extended to the groundwater surface, which was encountered at 5.8 feet and 5.7 feet bgs, respectively. Hand auger equipment encountered refusal at 5.5 feet and 5.3 feet bgs in B2-16 and B2-17.

On May 15, 2006, Mitchell Drilling Environmental Corp. of Eureka, CA. (C57 License #672617) installed two borings, B2-16b and B2-17b, for the purpose of collecting grab groundwater samples from the boring. Groundwater was encountered at 5.9 feet bgs in B2-16b and 6.0 feet bgs in B2-17b.

After receiving the results of the soil and groundwater samples from the borings discussed above, Mitchell Drilling Environmental Corp. installed two monitoring wells, MW-15 and MW-16. With concurrence from HCDEH, MW-16 was installed adjacent to the boring with the highest concentration of contaminants to assist in further delineating the extent of TPH-D contaminated groundwater at the site.

Boring Logs and Field Notes collected during drilling activities are included in Appendix E. The locations of the new borings and wells described above are shown on Figure 7, Appendix B.

### **3.1 Boring Installation**

Winzler and Kelly installed four borings using a three-inch diameter hand driven auger on April 25 and 26, 2006. The boring locations are shown on Figure 7, Appendix B. B2-14 and B2-15 extended to the groundwater surface, which was encountered at a depth of 5.8 feet and 5.7 feet bgs, respectively. The hand driven auger encountered refusal at 5.5 feet and 5.3 feet bgs in B2-16 and B2-17.

Soil samples were collected with a stainless steel, drive sample barrel lined with clean brass sleeves. Soil samples were collected at 5 feet bgs in all borings and at the groundwater interface for B2-14 and B2-15. Samples were capped with Teflon sheeting and plastic end caps, labeled, wrapped in a plastic storage bags and stored in a cooler, on ice. Sample numbers and depths were noted on the boring logs. The remaining sample was used for color and soil type classification using the Unified Soil Classification System and Munsell color charts. The soil lithology, depth to saturated soil, and depth to groundwater were logged for all borings and is included in Appendix E. Grab groundwater samples were collected from borings B2-14 and B2-15 using a disposable polyethylene bailer.

On May 15, 2006, Mitchell Drilling installed alternative borings B2-16b and B2-17b, with a truck-mounted hollow-stem auger, due to refusal encountered before reaching groundwater in the previous hand-boring attempt. Soil samples were collected using a split spoon sampler from 5 feet and 6.5 feet bgs in B2-16b and B2-17b. Grab groundwater samples were collected from B2-16b and B2-17b using a disposable polyethylene bailer.

Grab groundwater samples were transferred from the bailers to the appropriate size/type containers with the appropriate preservatives. Sample containers were labeled, wrapped in plastic bags and stored in a cooler, on ice, and transported to North Coast Laboratory for chemical analyses.

All soil and grab groundwater samples were collected in accordance with Winzler & Kelly's Standard Operating Procedures (SOPs) included in Appendix D.

### **3.2 Monitoring Well Installation**

After reviewing the analytical results from the samples collected during the installation of the borings, monitoring wells MW-15 and MW-16 were installed on May 17, 2006. The monitoring wells were drilled using a truck-mounted hollow-stem auger drill rig and soil samples were collected at five foot intervals using a split spoon sampler in accordance with Winzler and Kelly's SOPs, included in Appendix D. The soil lithology, sample locations, depth to saturated soil, depth to groundwater, and well construction details were logged for wells MW-15 and MW-16, and are provided in Appendix E.

The monitoring wells were constructed of 2-inch diameter PVC, slotted well screen and casing installed through the 8" diameter drilling augers. A uniform filter pack was installed from the bottom of the boring to a depth of 1 foot above the top of the well screen. The monitoring wells were screened from 3 ft bgs to the total depth of 20 ft bgs. Monterey #2/12 washed silica sand was placed around factory slotted screens with 0.010-inch slots. A 1-foot thick seal of hydrated bentonite pellets were placed over the filter pack with concrete to the surface. The tops of the PVC casings are approximately 2 inches below surface grade. The monitoring wells are protected by a flush-mounted traffic box set in concrete with locking well cap. For MW-15, the top of the traffic box is set slightly above the finished grade with a gently sloping concrete rim to avoid ponding water in the wet season. The traffic box for MW-16 was placed above grade to provide the property owner with access to add additional fill behind the former Dip Tank Building. The location of the new monitoring wells were surveyed as described below.

### 3.3 *Laboratory Analyses*

Based on the results of the previous investigations at this site and information known to Winzler & Kelly, the soil samples collected from this site were analyzed for the following constituents:

- Total Petroleum Hydrocarbons as Gasoline (TPH-G) and Benzene, Toluene, Ethylbenzene, and Xylenes, including m,p-Xylene and o-Xylene (BTEX) by EPA Method 8015B GCFID.
- Total Petroleum Hydrocarbons as Diesel (TPH-D) and Total Petroleum Hydrocarbons as Motor Oil (TPH-MO) by EPA Method 3550 GCFID with silica gel cleanup.

Groundwater samples were analyzed for the following constituents:

- Total Petroleum Hydrocarbons as Gasoline (TPH-G) and Benzene, Toluene, Ethylbenzene, and Xylenes, including m,p-Xylene and o-Xylene (BTEX) by EPA Method 5030/8021B.
- Total Petroleum Hydrocarbons as Diesel (TPH-D) and Total Petroleum Hydrocarbons as Motor Oil (TPH-MO) by EPA Method 3510/3630/8015B with silica gel cleanup.

Soil and water samples collected for chemical analyses were submitted under chain-of-custody documentation to North Coast Laboratories of Arcata, CA, a State-certified laboratory. All the laboratory analytical reports, chain-of-custody forms and quality control reports for all the samples collected by Winzler & Kelly during this scope of work can be found included in Appendix G, "Laboratory Results, Chain of Custody Forms, and QA/QC Documents".

### 3.4 *Site Survey Activities*

Following completion of the field activities, MW-15 and MW-16 were surveyed by Ontiveros and Associates for:

- Horizontal coordinates (0.1 foot accuracy) and,
- Vertical (0.01 foot accuracy) and horizontal (0.1 foot accuracy) coordinates of the top of casing of the new wells M-15 and M-16.

Note: The site survey was tied to the previous Winzler & Kelly survey at this site. The survey results were submitted to the State of California's GeoTracker web site on June 29, 2006.

## 4.0 **RESULTS**

### 4.1 *Soil Sample Analytical Results*

Soil samples collected during the drilling of B2-14 through B2-17 were below laboratory detection limits for all analytes tested with the exception of TPH-MO in samples B2-14-5, B2-14-5.75, and B2-17-5b, reported at concentrations of 10 ppm, 13 ppm, and 54 ppm, respectively.

The soil samples collected from MW-15 at a depth of 10 feet and 20 feet bgs, reported concentrations of TPH-G at 810 ppm and 4.1 ppm. The soil sample collected from 10 feet bgs, sample MW-15-10, also reported concentrations of TPH-D and TPH-MO at 950 ppm and 130 ppm, respectively. Concentrations for other constituents from samples collected during the installation of MW-15 were below laboratory detection limits.

The soil samples collected during the installation of MW-16 reported concentrations below laboratory detection limits for all tested constituents.

A summary of all the above soil sample results can be found on Table 2 in Appendix C, and the locations of the above-noted borings can be found on Figure 7, Appendix B.

#### **4.2 *Grab Groundwater Analytical Results***

Grab groundwater samples collected during the drilling of B2-14 through B2-17 reported concentrations below laboratory detection limits for all tested constituents with the exception of B2-16, which had Toluene reported at 0.56 ppb.

A summary of all the above grab groundwater sample results can be found on Table 1 in Appendix C, and the locations of the above-noted borings can be found on Figure 7, Appendix B.

Monitoring wells MW-15 and MW-16 were developed, purged, and sampled along with the other onsite monitoring wells on June 8<sup>th</sup> and 9<sup>th</sup>. The sample data from these wells will be addressed in the quarterly monitoring report after the sample results are obtained from the laboratory.

#### **4.3 *Quality Assurance/Quality Control (QA/QC)***

Field QA/QC was provided by adherence to the Winzler & Kelly's SOPs for *Soil Boring and Monitoring Well Installation* as contained in Appendix D.

A travel blank was submitted with the groundwater samples. All constituents were below laboratory detection limits in the travel blank. Laboratory QA/QC was provided by the use of lab Method Blanks to preclude false positive analysis of analytes and the use of Laboratory Control Spike samples (LCS) to evaluate the percentage recovery of target analytes during analysis.

In regard to the analyses of the soil samples collected from the installation of borings and monitoring wells, the laboratory provided the following notes:

All Samples submitted for a silica gel cleanup were initially analyzed for diesel/motor oil. The samples showing no detectable levels of the analytes were not subjected to the cleanup procedure.

- TPH as Diesel/Motor Oil w/ Silica Gel Cleanup:
  - "Sample MW-15-10 contains material similar to degraded or weathered diesel oil."
  - "Sample MW-15-10 does not have the typical pattern of fresh motor oil; however, the result reported represents the amount of material in the motor oil range."
  - "Due to contaminate present in the method blank and sample B2-17-5b, the reporting limit for this sample was raised."
  - "The relative percent difference (RPD) for the laboratory control samples was above the acceptance limit for diesel. This indicates that the results could be variable. Since there were no detectable levels of analytes in the samples, the data were accepted."

- TPH-G:
  - “Sample MW-15-10 does not present a peak pattern consistent with that of gasoline. The reported result represents the amount of material in the gasoline range.”
  - “Sample MW-15-20 does not present a peak pattern constant with that of gasoline. The peak elute towards the end of the gasoline range. In the laboratories’ judgment, the material appears to be a product heavier than gasoline. Due to the differences in the purging efficiency of these heavier materials the results may be variable. The reported results represent the amount of material in the gasoline range.”
- BTEX:
  - “Sample MW-15-10 was diluted and some reporting limits were raised additionally due to matrix interference. This sample is also being reported as non-detected with a dilution for some analytes due to matrix interference.”

In regard to the analyses of the grab groundwater samples collected from the installation of borings, the laboratory provided the following notes:

- TPH as Diesel/Motor Oil:
  - “The relative percent difference (RPD) for the laboratory control samples were above the acceptable limits for diesel. This indicates that the results could be variable. Since there were no detectable levels of the analytes in the sample, the data were accepted.”
  - “The relative percent difference (RPD) for the laboratory control samples was above the acceptable limits for motor oil. This indicates that the results could be variable. Since there were no detectable levels of the analytes in the sample, the data were accepted.”
- BTEX:
  - “The reporting limit for MTBE was raised for sample B2-17 due to matrix interference.”

#### ***4.4 Disposition of Wastewater and Drill Cuttings***

Drummed drill cuttings are stored at the site pending HCDEH approval and disposal arrangements. It is recommended that drums containing soil cuttings from the borings and MW-16, be spread onsite in a manner as to prevent soil from being washed or tracked off the site.

Soil from MW-15 and the rinsate water will be disposed of at properly permitted facilities. Disposal of the development purge water from wells MW-15 and MW-16 will be determined upon receipt of laboratory data.

## 5.0 CONCLUSIONS

Four borings and two additional monitoring wells were installed in the vicinity of the former UST location to assist in the defining the boundary of the groundwater TPH-D plume.

Soil sample results from the installation of MW-15 confirms that soil contamination is still present near the boundary of the extent of soil excavation from previous remediation activities. Soil samples from borings B2-14, B2-15, B2-16, and B2-17 as well as monitoring well MW-16 indicate that soil contamination has not migrated to any extent to the southern side of the building.

Grab groundwater samples collected during the drilling of borings B2-14 through B2-17 indicate that groundwater contamination has not migrated offsite in the downgradient direction of the source area. This will be further verified upon the receipt of results from the groundwater samples collected on June 8<sup>th</sup> and 9<sup>th</sup> from MW-15 and MW-16 and the other monitoring wells on-site.

## 6.0 RECOMMENDATIONS

This Report of Findings is to be submitted to HCDEH for their review, comment and/or consideration for the following recommendation(s). In a continued effort to bring the investigation at this site toward closure, and after reviewing the information known to Winzler and Kelly and the conclusions presented in this Report of Findings, Winzler & Kelly recommends the following:

- The groundwater monitoring program should be continued at the site. The Program is to consist of quarterly groundwater analytical sampling for a full hydrologic cycle for all the installed wells. Quarterly monitoring reports should be submitted to the HCDEH, including groundwater gradient maps, laboratory analytical data, and laboratory quality control reports.

## 7.0 DISTRIBUTION

Copies of this report have been sent to the following:

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November 7, 2005

Blue Lake Forest Products  
Charles D. Aalfs  
PO Box 2159  
Arcata, CA 95518-1176

**Subject: Blue Lake Forest Products  
1619 Glendale Drive, Arcata, California  
LOP Case #12196**

Dear Mr. Aalfs:

Thank you for submitting the October 7, 2005 *Second Quarterly Monitoring Report for June 2005*, and the October 14, 2005 *Third Quarterly Monitoring Report for September 2005*, prepared by Winzler & Kelly Consulting Engineers.

We have some comments and questions:

- We concur with continuing the existing monitoring schedule.
- We recommend installing monitoring wells within 20 feet downgradient of the identified areas of soil contamination. We recommend a screened interval of 5 to 15 feet below ground surface (bgs).
- The soil logs for monitoring wells MW-11 through MW-14 show screened intervals to bottom of hole at 25 feet bgs. The notes on the soil logs say the screened intervals are 5 feet to 20 feet bgs. What are the screened intervals of these monitoring wells?
- Can you provide us with an update on the status of Well AW-1?

Feel free to contact me at (707) 268-2238, or Mark Verhey at (707) 268-2208 if you have any questions.

Sincerely,

A handwritten signature in cursive script that reads "Justin M. Shobe".

Justin M. Shobe  
Environmental Health Technician I  
Humboldt County Local Oversight Program

JMS: ar

cc: Patrick Kaspari, Winzler & Kelly ✓  
Gary Johnston, 1325 G Street, Eureka, CA 95501

12196.026/206L



F.12: 00 142803 - 11400



**Humboldt County Department of Health and Human Services**  
**DIVISION OF ENVIRONMENTAL HEALTH**

100 H Street - Suite 100 - Eureka, CA 95501  
Voice: 707-445-6215 - Fax: 707-441-5699 - Toll Free: 800-963-9241  
envhealth@co.humboldt.ca.us

March 21, 2006

Blue Lake Forest Products  
Charles D. Aalfs  
PO Box 2159  
Arcata, CA 95518-1176

**RECEIVED**  
MAR 22 2006  
WK-EUREKA

**Subject: Blue Lake Forest Products**  
**1619 Glendale Drive, Arcata, California**  
**LOP Case #12196**

Dear Mr. Aalfs:

Thank you for submitting *Workplan* and *Workplan Addendum*, prepared by Winzler & Kelly Consulting Engineers.

- We concur with the proposed borings.
- We recommend future monitoring wells be installed in the areas of highest concentration, as close to the remaining source as possible, with screen intervals of 5 to 15 feet below ground surface (bgs).
- We concur with the proposed location of MW-15. We recommend waiting until the results of borings are received since additional monitoring wells may be necessary at this site to adequately describe the groundwater plume resulting from the remaining source. We recommend Winzler and Kelly comment on the information regarding the extent and concentration of the remaining source. We recommend installing borings inside the existing building to complete delineation of the remaining source.
- Please respond to our previous question regarding screened intervals of existing monitoring wells.
- Please describe the usefulness and accessibility of all existing monitoring wells.

Feel free to contact me at (707) 268-2208 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Mark Verhey".

Mark Verhey, Geologist  
Humboldt County Local Oversight Program

MAV: ar

cc: Patrick Kaspari, Winzler & Kelly ✓  
Gary Johnston, 1325 G Street, Eureka, CA 95501

12196.027/206L

HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT  
WELL and BORING PERMIT APPLICATION

RECEIVED

Facility ID # 12196 Permit # 206-J MAY 11 2006

Facility Name: Blue Lake Forest Products HUMBOLDT CO. DIVISION OF ENVIRONMENTAL HEALTH

Site Address: 1619 Glendale Dr. Arcata, CA 95521

Site Owner: Gary Johnston Telephone: 442-6765  
Address: 1325 G Street Eureka, CA 95501 AP#: 516-151-004 & 003

RP Name: Dan Aulfs Telephone: 825-7809  
Address: P.O. Box 2159 McKinleyville, CA 95519

Consultant: Winzler and Kelly Consulting Engineers Telephone: 443-8326  
Address: 633 Third Street Eureka, CA 95501 Reg.#/Type: C055722

Driller: Mitchell Drilling Environmental Corp. Telephone: 444-9040  
Address: 7900 Myrtle Ave Eureka, CA 95503 C-57 Lic.#: 672617

# On-site		# Off-site	
Wells	<u>2</u>	Wells	
Borings		Borings	

Activity: ☒ Construct ☐ Destroy ☐ Repair/Modify Electrode Type: \_\_\_\_\_

Well Type: ☒ Monitoring Well ☐ Injection Well ☐ Vapor Extraction ☐ Geologic Boring  
☐ Extraction Well ☐ Piezometer ☐ Vapor Point ☐ Soil Gas Survey  
☐ Vadose Well ☐ Cathodic Protection ☐ Direct Push Boring ☐ Temporary Well Point

Investigation Type: ☐ Site Assessment ☐ Disposal Practice ☒ UST ☐ Other\*  
☐ Surface Contamination ☐ Surface Impoundment ☐ AST

\*Specify: \_\_\_\_\_

Investigation Phase: ☐ Initial ☒ Subsequent ☐ Remediation ☐ Closure

Suspected Contaminants: TPH-D/MO

Disposal/Containment for Soil Cuttings: 55 gallon DOT drum - sampled for characterization

Disposal/Containment for Rinsate: " for disposal

Disposal/Containment for Development Water: "

Permits will not be processed with out the following information:

- ☒ Scaled Construction Detail ☒ Appropriate Fees  
☒ Detailed Site Plan ☒ Copy of Workplan (if not on file at HCDEH)  
☒ Lead Agency Approval Letter on file

☐ Off Site Well Requirements:

- ☐ Legal Right of Entry  
☐ Off Site Address/Location  
☐ Encroachment Permit  
☐ Coastal Zone Permit

Proposed Work Date: 5/17/06

HUMBOLDT COUNTY DIVISION of ENVIRONMENTAL HEALTH - HAZARDOUS MATERIALS UNIT  
WELL and BORING PERMIT APPLICATION

1

Facility ID # 121916

Permit # 206-I

Facility Name: Blue Lake Forest Products

Site Address: 1619 Glendale Dr. Arcata, CA 95521

Site Owner: Gary Johnston

Telephone: 442-6765

Address: 1325 G Street Eureka, CA 95501

AP#: \_\_\_\_\_

RP Name: Dan Aulfs

Telephone: 825-7809

Address: PO Box 2159 McKinleyville, CA 95519

Consultant: Winzler & Kelly Consulting Engineers

Telephone: 443-8326

Address: 633 Third St. Eureka, CA 95501

Reg.#/Type: C055722

Driller: Hand driller / No contractor

Telephone: \_\_\_\_\_

Address: \_\_\_\_\_

C-57 Lic.#: \_\_\_\_\_

# On-site		# Off-site	
Wells	Borings	Wells	Borings
	<u>4</u>		

Activity: ☒ Construct ☐ Destroy ☐ Repair/Modify

Electrode Type: \_\_\_\_\_

Well Type: ☐ Monitoring Well ☐ Injection Well ☐ Vapor Extraction ☐ Geologic Boring  
☐ Extraction Well ☐ Piezometer ☐ Vapor Point ☐ Soil Gas Survey  
☐ Vadose Well ☐ Cathodic Protection ☒ Direct Push Boring ☐ Temporary Well Point

Investigation Type: ☐ Site Assessment ☐ Disposal Practice ☒ UST ☐ Other\*  
☐ Surface Contamination ☐ Surface Impoundment ☐ AST

\*Specify: \_\_\_\_\_

Investigation Phase: ☐ Initial ☒ Subsequent ☐ Remediation ☐ Closure

Suspected Contaminants: TPH-D/MO

Disposal/Containment for Soil Cuttings: 55 gallon DOT drum - sampled for characterization for disposal

Disposal/Containment for Rinsate: " "

Disposal/Containment for Development Water: N/A

Permits will not be processed with out the following information:

- ☐ Scaled Construction Detail ☒ Appropriate Fees  
☒ Detailed Site Plan ☒ Copy of Workplan (if not on file at HCDEH)

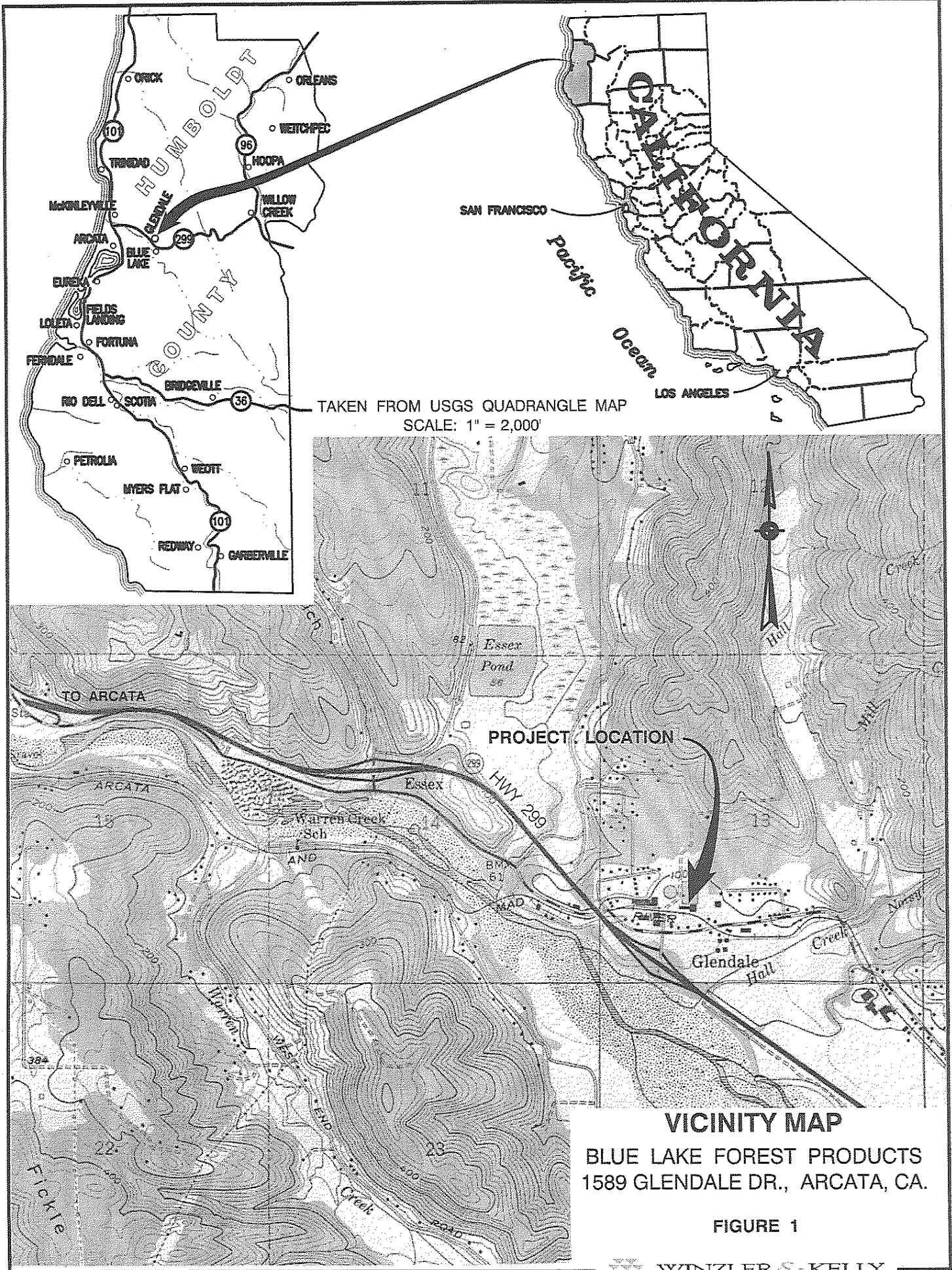
☒ Lead Agency Approval Letter

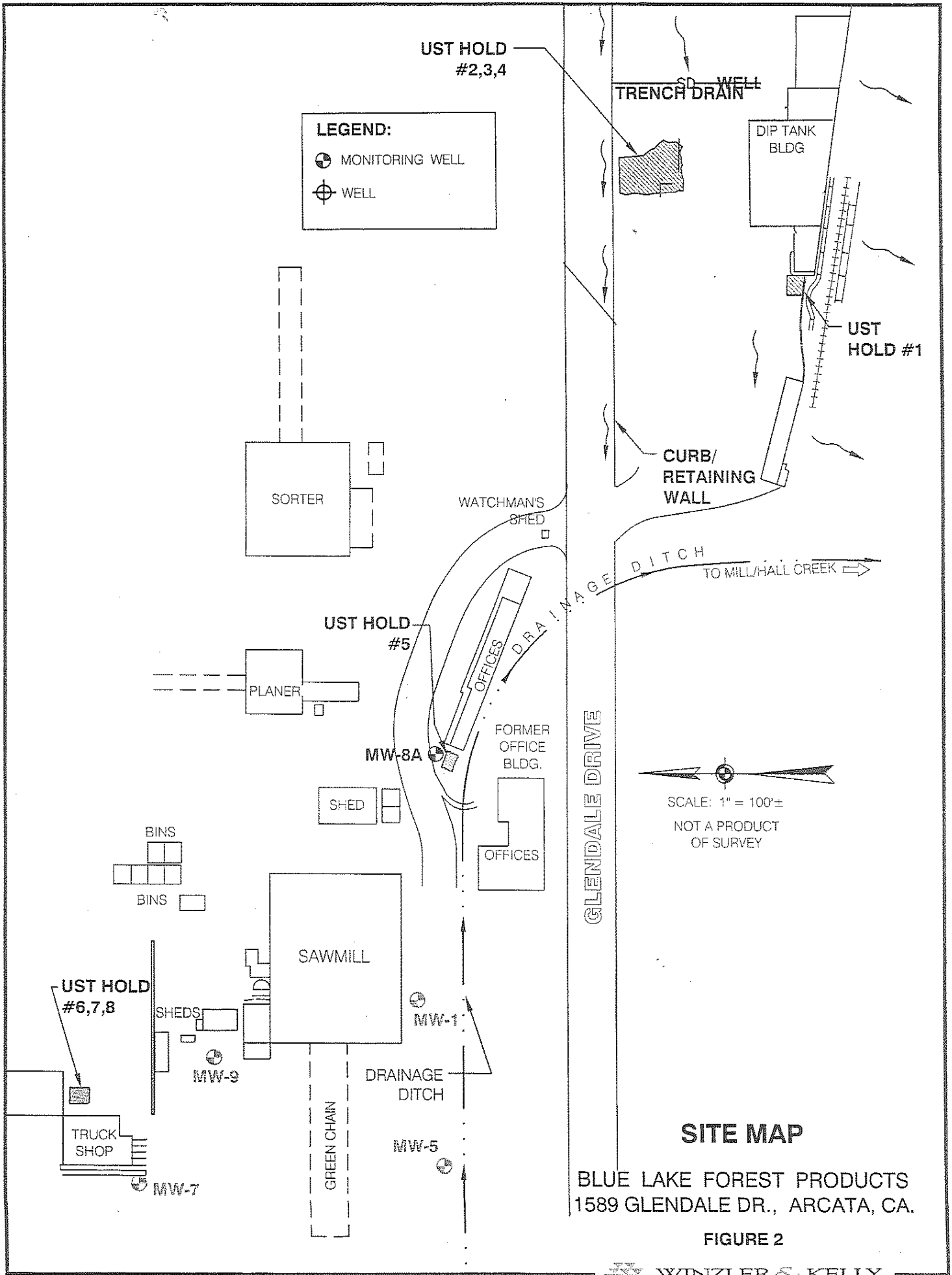
☐ Off Site Well Requirements:

- ☐ Legal Right of Entry  
☐ Off Site Address/Location  
☐ Encroachment Permit  
☐ Coastal Zone Permit

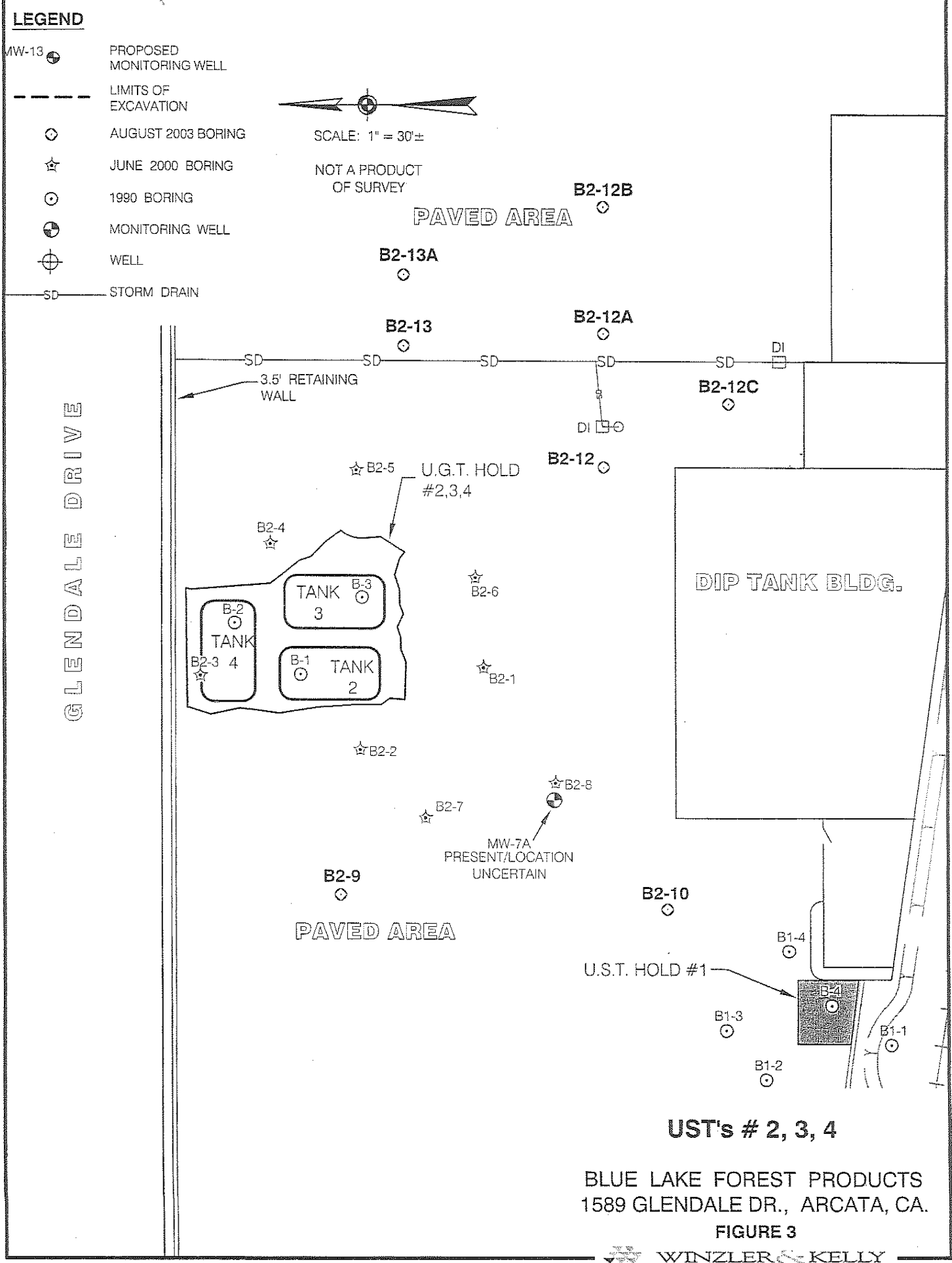
Proposed Work Date: 4.25.2006







FILE: J:\CAD\JOBS\2000\00142803\dwg\428c205f03a.dwg DATE: Dec 17 04 @ 11:05am



201

DEPTH OF EXCAVATION

AUGUST 2003 BORING

JUNE 2000 BORING

1990 BORING

MONITORING WELL

WELL

- STORM DRAIN

SCALE: 1" = 30' ±

NOT A PRODUCT  
OF SURVEY

PAVED AREA

09-12

02-13

02-12A

B2-120

## MECHANICAL PIT

DIP TANK BLDG.

# GENERAL DEDICATED

B-2  
TANK

ANK  
3



ANK

100

75

32.

B2-9

PAVED AREA

201

☆ B2.1

62

DILEO

02-10

U.S.T. HOLD #1

B1-2

B1-3

B1-2



## ACTUAL EXTENT AND DEPTH OF EXCAVATION

U.S.T. HOLD #1, 2, 3, 4

BLUE LAKE FOREST PRODUCTS  
1589 GLENDALE DR., ARCATA, CA.

FIGURE 4

WINZLER &amp; KELLY



# LEGEND

- LIMITS OF EXCAVATION
- 1-10 SOIL SAMPLE (No.-Depth)
- AUGUST 2003 BORING
- ☆ JUNE 2000 BORING
- 1990 BORING
- ⊕ MONITORING WELL
- ⊕ WELL
- SD STORM DRAIN

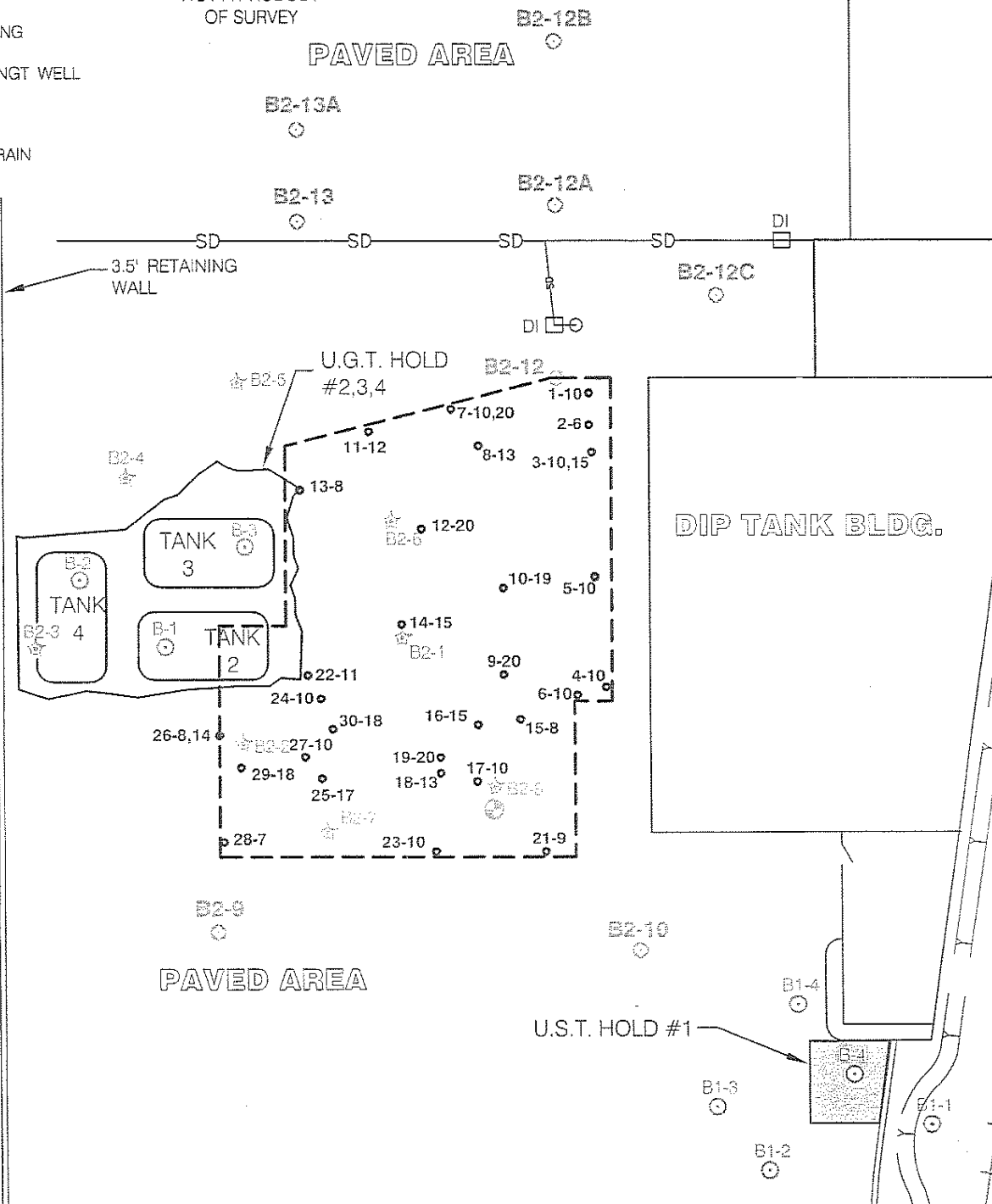


SCALE: 1" = 30'±

NOT A PRODUCT OF SURVEY

PAVED AREA

GLENDAL DRIVE



## SOIL SAMPLE LOCATIONS

U.S.T. HOLD #1, 2, 3, 4  
 BLUE LAKE FOREST PRODUCTS  
 1589 GLENDALE DR., ARCATA, CA.

FIGURE 5



WINZLER & KELLY

# LEGEND

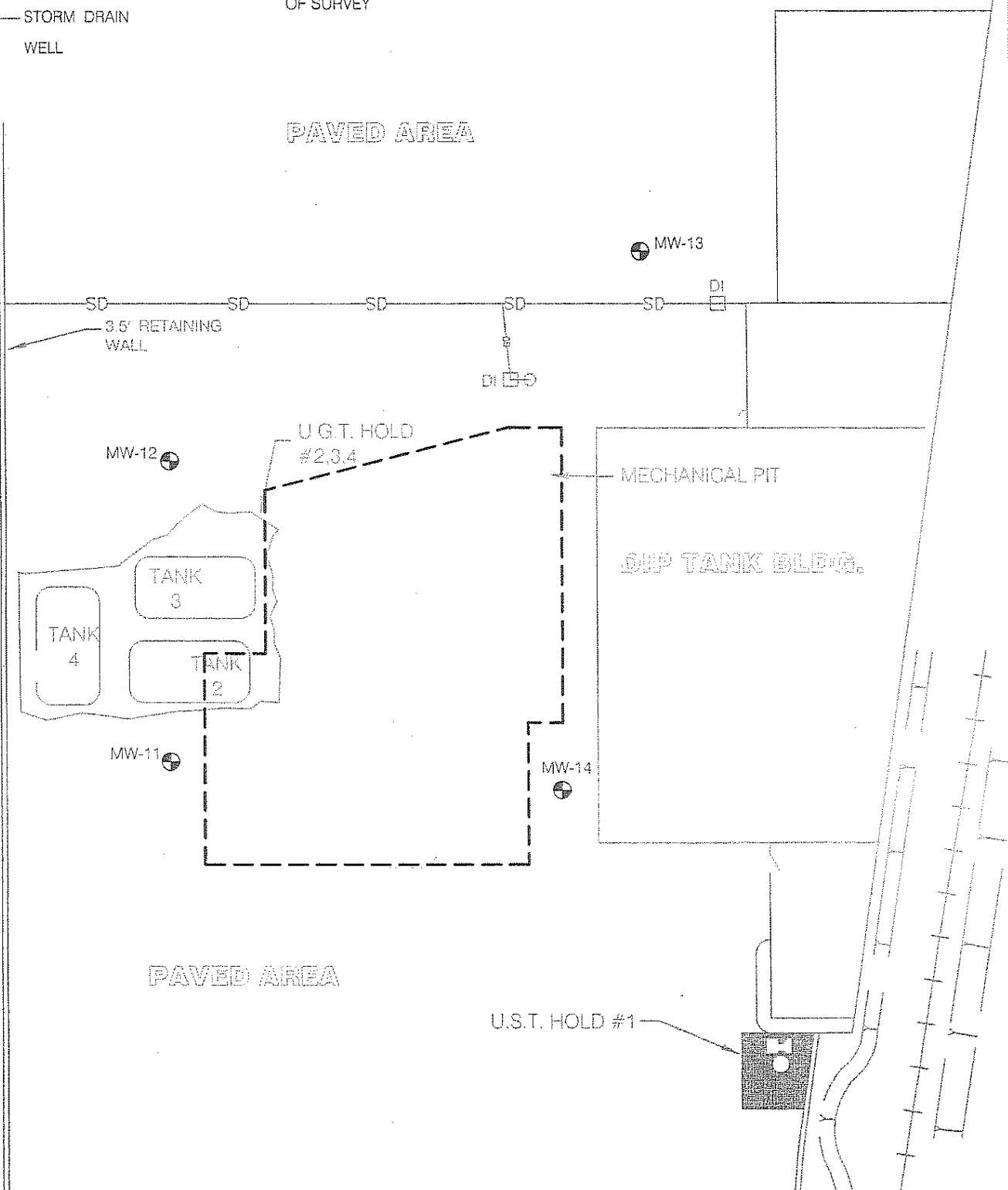
- MW-13  
MONITORING WELL
- LIMITS OF EXCAVATION
- SD  
STORM DRAIN
- ⊕  
WELL



SCALE: 1" = 30'±

NOT A PRODUCT OF SURVEY

GLENDALE DRIVE



## MONITORING WELL LOCATIONS

U.S.T. HOLD #1, 2, 3, 4

BLUE LAKE FOREST PRODUCTS  
1589 GLENDALE DR., ARCATA, CA.

FIGURE 6



WINZLER & KELLY

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# LEGEND

MW-13



MONITORING WELL



LIMITS OF  
EXCAVATION

SD

STORM DRAIN



BORING

SCALE: 1" = 30'±

NOT A PRODUCT  
OF SURVEY



GLENDALE DRIVE

B2-

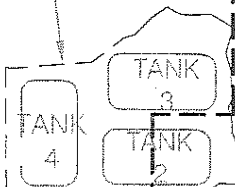
PAVED AREA

MW-13

3.5' RETAINING  
WALL

U.G.T. HOLD  
#2,3,4

MW-12



MW-11

MW-15

MW-14

PAVED AREA

DIP TANK BLDG.

U.S.T. HOLD #1

B2-17

MW-16

B2-16

B2-15

B2-14

**MONITORING WELL  
AND BORING LOCATIONS**  
U.S.T. HOLD #1, 2, 3, 4  
BLUE LAKE FOREST PRODUCTS  
1589 GLENDALE DR., ARCATA, CA.

FIGURE 7



WINTER & KELLY



**TABLE 1**  
**HISTORIC GRAB GROUNDWATER ANALYTICAL RESULTS - UST Hold #1, 2, 3, 4**  
**BLUE LAKE FOREST PRODUCTS**  
**JUNE 2000 AUGUST 2003**

Boring	Date	TPH-Diesel With Silica Gel Clean-up/ pre-cleaned (ppb)	TPH-Motor Oil With Silica Gel Clean-up/ (ppb)	TPH-Gas (ppb)	TBA Tertiary Butyl Alcohol (ppb)	MTBE Methyl tert butyl ether (ppb)	DIPE Diisopropyl I-ether (ppb)	ETBE Ethyl-t- butyl ether (ppb)	Benzene (ppb)	TAME Tertiary Amyl Methyl Ether (ppb)	Toluene (ppb)	Ethyl- Benzene (ppb)	m,p Xylene (ppb)	o-Xylene (ppb)	Lead (ppb)
<b>TANK HOLD #1</b>															
B1-1	Jun-00	< 50	NA	< 50	< 10	< 0.50	< 1.0	< 1.0	< 0.50	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0 <sup>5</sup>
B1-1 (Dupl)	Jun-00	< 50	NA	< 50	< 10	< 0.50	< 1.0	< 1.0	< 0.50	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	NA
B1-2	Jun-00	< 50	NA	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	17
B1-3	Jun-00	< 50	NA	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	38
B1-4	Jun-00	< 50	NA	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	< 5.0 <sup>5</sup>
<b>TANK HOLDS #2,3,4</b>															
B2-1	Jun-00	48,000 / 71,000 <sup>1,3</sup>	NA	880 <sup>6</sup>	NA	< 10	NA	NA	< 2.0	NA	< 3.0 <sup>7</sup>	< 1.5 <sup>7</sup>	< 1.5 <sup>7</sup>	< 1.5 <sup>7</sup>	NA
B2-1 (Dupl)	Jun-00	42,000 / 72,000 <sup>3</sup>	NA	780 <sup>6</sup>	NA	< 10	NA	NA	< 2.0	NA	< 4.0 <sup>7</sup>	< 1.5 <sup>7</sup>	< 1.5 <sup>7</sup>	< 2.0 <sup>7</sup>	NA
B2-2	Jun-00	9,400 / 17,000 <sup>6,9</sup>	NA	340 <sup>6</sup>	NA	< 3.0	NA	NA	< 0.50	NA	< 1.4 <sup>7</sup>	< 3.0 <sup>7</sup>	< 3.0 <sup>7</sup>	< 1.4 <sup>7</sup>	NA
B2-3	Jun-00	< 50	NA	< 50	NA	3.2	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	NA
B2-4	Jun-00	1,900 / 2,600 <sup>9</sup>	NA	160 <sup>6</sup>	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	NA
B2-5	Jun-00	11,000 / 18,000 <sup>3</sup>	NA	360 <sup>6</sup>	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	NA
B2-6A	Jun-00	8,200 / 12,000 <sup>6,9</sup>	NA	310 <sup>6</sup>	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 1.0 <sup>7</sup>	NA
B2-6B (Dupl)	Jun-00	13,000 / 19,000 <sup>6,9</sup>	NA	360 <sup>6</sup>	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 1.2 <sup>7</sup>	NA
B2-7	Jun-00	< 50 / 57 <sup>1</sup>	NA	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	NA
B2-8A **	Jun-00	< 50 <sup>6</sup>	NA	320 <sup>6</sup>	NA	< 3.0	NA	NA	< 0.50	NA	< 4.0 <sup>7</sup>	< 3.0 <sup>7</sup>	< 3.0 <sup>7</sup>	< 3.0 <sup>7</sup>	NA
B2-9	Aug-03	< 50	NA	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	680*****
B2-10	Aug-03	< 50	NA	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	1500*****
B2-12	Aug-03	30,000	NA	200	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.10	< 0.50	< 1.2	240*****
B2-12A	Aug-03	150,000	NA	300	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 1.2	< 0.50	< 1.4	280*****
B2-12B	Aug-03	2,100	NA	220	NA	< 3.0	NA	NA	1.3	NA	1.3	< 0.50	0.67	0.66	< 10 / 170****
B2-12C	Aug-03	6,800	NA	120	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	< 10 / 850****
B2-13	Aug-03	31,000	NA	220	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	1300*****
B2-13A	Aug-03	< 50	NA	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	< 10 / 420****
B2-14	Apr-06	< 50	< 170	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	NA
B2-15	Apr-06	< 50	< 170	< 50	NA	< 3.0	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	NA
B2-16	May-06	< 50	< 170	< 50	NA	< 3.0	NA	NA	< 0.50	NA	0.56	< 0.50	< 0.50	< 0.50	NA
B2-17	May-06	< 50	< 170	< 50	NA	< 6.0 <sup>7</sup>	NA	NA	< 0.50	NA	< 0.50	< 0.50	< 0.50	< 0.50	NA

\* B1-1 was run in duplicate from the same sample container. Both results are reported in fractions 03A and in 12A, 12B, and 12E.

\*\* B2-8A is the single sample from boring 8A, no duplicate was used.

\*\*\* References to MW-A refer to Well "A", in vicinity of UST Hold 2,3,4, adjacent to Dip Tank building.

\*\*\*\* Dissolved Lead / Total Lead (EPA 200.9)

\*\*\*\*\* ICAP Metals with acid digestion (Lead) (EPA 200.7)

TPH-Diesel analysis by EPA 3550/GCFID using a silica gel clean-up, however, due to low surrogate recovery in many such analysis, a "pre-cleaned" standard TPH-D analysis was also performed, denoted in results performed, denoted in results as [w/silica gel / "pre-cleaned"]. All diesel results represent material in the diesel range of molecular weights only.

TPH-Gas and VOC analysis by 8260B including oxygenates TBA, MTBE, DIPE, ETBE and TAME, where indicated

or

TPH-Gas and BTEX analysis, including MTBE, by EPA 8021B/5035, not including oxygenates.

Total Lead analysis by EPA 200.0 for June 2000 samples

Total Lead analysis by EPA 200.7 or 200.9 for August 2003 samples.

Reporting limits for Lead vary depending on the quantity of Lead in the sample. Varying dilutions are used due to the calibration curve of the instrument.

1 Sample contains material in the diesel range of molecular weights, but the material does not exhibit the peak pattern typical of diesel oil.

2 Due to low LCSILCSD values for the silica gel diesel analysis, sample will include "pre-cleaned" value in addition.

3 The surrogates could not be quantified due to a sample dilution.

5 The reporting limit was lowered to 5 ug/L by client request, data accepted as lowest calib. standard is 5 ug/L.

6 Samples do not have the typical pattern of fresh gasoline, however, the results reported represent the amount of material in the gasoline range.

7 Some reporting limits were raised due to matrix interference.

9 The surrogates for "pre-cleaned" samples could not be quantified due to matrix.

**TABLE 2**  
**HISTORIC SOIL ANALYTICAL RESULTS - UST Hold #1, 2, 3, 4**  
**BLUE LAKE FOREST PRODUCTS**

Boring	Date	Sample Interval (ft)	TPH-D: Silica Gel Clean-up / Pre-cleaned (ppm)	TPH-MO (ppm)	TPH-G (ppm)	MTBE (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	m,p Xylene (ppm)	o Xylene (ppm)
B-1A <sup>a</sup>	Apr-90	6' - 6.5'	930	NA	NA	NA	<0.01	0.36	<0.01	<0.01 <sup>a</sup>	NA
B-1B <sup>a</sup>		11' - 11.5'	<10	NA	NA	NA	<0.01	0.051	<0.01	<0.01 <sup>a</sup>	NA
B-1C <sup>a</sup>		16' - 16.5'	<10	NA	NA	NA	<0.01	0.125	<0.01	<0.01 <sup>a</sup>	NA
B-1D <sup>a</sup>		21' - 21.5'	13	NA	NA	NA	<0.01	0.22	<0.01	<0.01 <sup>a</sup>	NA
B-2A <sup>a</sup>	Apr-90	6' - 6.5'	110	NA	NA	NA	<0.01	0.20	<0.01	<0.01 <sup>a</sup>	NA
B-2B <sup>a</sup>		11' - 11.5'	43	NA	NA	NA	<0.01	0.26	<0.01	<0.01 <sup>a</sup>	NA
B-2C <sup>a</sup>		16' - 16.5'	23	NA	NA	NA	<0.01	0.135	<0.01	<0.01 <sup>a</sup>	NA
B-2D <sup>a</sup>		21' - 21.5'	<10	NA	NA	NA	<0.01	<0.01	<0.01	<0.01 <sup>a</sup>	NA
B-3A <sup>a</sup>	Apr-90	6' - 6.5'	14	NA	NO RECOVERY	NA	<0.01	<0.01	<0.01	<0.01 <sup>a</sup>	NA
B-3B <sup>a</sup>		16' - 16.5'	140	NA	NA	NA	<0.01	0.056	<0.01	<0.01 <sup>a</sup>	NA
B-3C <sup>a</sup>		21' - 21.5'	370	NA	NA	NA	<0.01	<0.01	<0.01	<0.01 <sup>a</sup>	NA
B-3D <sup>a</sup>		25' - 25.5'	35	NA	NA	NA	<0.01	0.023	<0.01	<0.01 <sup>a</sup>	NA
B-3E <sup>a</sup>		6' - 6.5'	48	NA	NA	NA	<0.01	<0.01	<0.01	<0.01 <sup>a</sup>	NA
B-4A <sup>a</sup>	Apr-90	11' - 11.5'	33	NA	NA	NA	<0.01	<0.01	<0.01	<0.01 <sup>a</sup>	NA
B-4B <sup>a</sup>		16' - 16.5'	<10	NA	NA	NA	<0.01	<0.01	<0.01	<0.01 <sup>a</sup>	NA
B-4C <sup>a</sup>				NO RECOVERY	NO RECOVERY	NO RECOVERY					
B-4D <sup>a</sup>											
MW-7A <sup>a</sup>	Apr-90	6' - 6.5'	210	NA	NA	NA	<0.01	0.052	<0.01	<0.01 <sup>a</sup>	NA
MW-7B <sup>a</sup>		11' - 11.5'	<10	NA	NA	NA	<0.01	0.021	<0.01	<0.01 <sup>a</sup>	NA
MW-7C <sup>a</sup>		16' - 16.5'	<10	NA	NA	NA	<0.01	0.24	<0.01	<0.01 <sup>a</sup>	NA
MW-7D <sup>a</sup>		21' - 21.5'	<10	NA	NA	NA	<0.01	0.18	<0.01	<0.01 <sup>a</sup>	NA
MW-7E <sup>a</sup>		26' - 26.5'	<10	NA	NA	NA	<0.01	0.022	<0.01	<0.01 <sup>a</sup>	NA
MW-7F <sup>a</sup>		31' - 31.5'	<10	NA	NA	NA	<0.01	0.11	<0.01	<0.01 <sup>a</sup>	NA
B1-1	Jun-00	5' - 5.5'	<1.0 <sup>4</sup>	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		7.5' - 8.0'	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B1-2	Jun-00	5' - 5.5'	1.8 / 1.4 <sup>2</sup>	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		10' - 10.5'	1.3 / 1.6 <sup>2</sup>	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B1-3	Jun-00	5' - 5.5'	<1.0 <sup>5</sup>	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		9' - 9.5'	1.3 / 1.1 <sup>2</sup>	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B1-4	Jun-00	5' - 5.5'	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		9' - 9.5'	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		10.5' - 11'	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-1	Jun-00	3.5' - 4'	3,300 / 5,400 <sup>1,3</sup>	NA	910 <sup>8</sup>	<5.0 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>	<4.0 <sup>8</sup>	<4.0 <sup>8</sup>	<7.0 <sup>8</sup>
		9.5' - 10'	1,800 / 3,100 <sup>1,3</sup>	NA	52 <sup>8</sup>	<0.25 <sup>8</sup>	<0.025 <sup>8</sup>	<0.025 <sup>8</sup>	<0.20 <sup>8</sup>	<0.10 <sup>8</sup>	<0.50 <sup>8</sup>
		12.5' - 13'	1,900 / 3,700 <sup>1,3</sup>	NA	360 <sup>8</sup>	<5.0 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>	<1.5 <sup>8</sup>
		18.5' - 19'	1,100 / 2,000 <sup>1,3</sup>	NA	94 <sup>8</sup>	<0.50 <sup>8</sup>	<0.050 <sup>8</sup>	<0.050 <sup>8</sup>	<0.20 <sup>8</sup>	<0.050 <sup>8</sup>	<0.50 <sup>8</sup>
		22.5' - 23'	2.6 / 4.7 <sup>1</sup>	NA	4.3 <sup>8</sup>	<0.050	<0.0050	<0.0050	<0.010 <sup>7</sup>	<0.010 <sup>7</sup>	<0.020 <sup>7</sup>
B2-2	Jun-00	5' - 5.5'	770 / 1,600 <sup>1,3</sup>	NA	230 <sup>8</sup>	<2.5 <sup>8</sup>	<0.25 <sup>8</sup>	<0.25 <sup>8</sup>	<1.0 <sup>8</sup>	<0.70 <sup>8</sup>	<2.5 <sup>8</sup>
		10' - 10.5'	<1.0 <sup>5</sup>	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		14.5' - 15'	<1.0 <sup>5</sup>	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		19.5' - 20'	<1.0 <sup>5</sup>	NA	2.8 <sup>8</sup>	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-3	Jun-00	4.5' - 5.0'	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		9.5' - 10'	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
		14.5' - 15'	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

Cont.

**TABLE 2**  
**HISTORIC SOIL ANALYTICAL RESULTS - UST Hold #1, 2, 3, 4**  
**BLUE LAKE FOREST PRODUCTS**

**TABLE 2 (Cont.)**

Boring	Date	Sample Interval (ft)	TPH-D: Silica Gel Clean-up / Pre-cleaned (ppm)	TPH-MO (ppm)	TPH-G (ppm)	MTBE (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	m,p Xylene (ppm)	o Xylene (ppm)
B2-4	Jun-00	4.5' - 5.0'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		9.5' - 10'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		14.5' - 15'	190 / 370 <sup>13</sup>	NA	72 <sup>8</sup>	< 0.50 <sup>8</sup>	< 0.050 <sup>8</sup>	< 0.050 <sup>8</sup>	< 0.20 <sup>8</sup>	< 0.20 <sup>8</sup>	< 0.20 <sup>8</sup>
B2-5	Jun-00	18.5' - 19'	2.7 / 3.8 <sup>1</sup>	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		4.5' - 5.0'	1.8 / 2.5 <sup>1</sup>	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		9.5' - 10'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		11.5' - 12'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		16' - 16.5'	3.0 / 4.2 <sup>1</sup>	NA	3.7 <sup>8</sup>	< 0.050	< 0.050	< 0.050	< 0.050	< 0.050	< 0.010 <sup>7</sup>
B2-6	Jun-00	18.5' - 19'	44 / 50 <sup>13</sup>	NA	14 <sup>8</sup>	< 0.050	< 0.050	< 0.050	< 0.020 <sup>7</sup>	< 0.20 <sup>7</sup>	< 0.10 <sup>7</sup>
		4.5' - 5.0'	42 <sup>1</sup>	NA	11 <sup>8</sup>	< 0.050	< 0.0050	< 0.0050	< 0.020 <sup>7</sup>	< 0.020 <sup>7</sup>	< 0.050 <sup>7</sup>
		10' - 10.5'	3,400 / 13 <sup>8</sup>	NA	510 <sup>8</sup>	< 5.0 <sup>8</sup>	< 0.50 <sup>8</sup>	< 0.50 <sup>8</sup>	< 1.8 <sup>8</sup>	< 1.8 <sup>8</sup>	< 3.0 <sup>8</sup>
		15' - 15.5'	2600 <sup>8</sup>	NA	490 <sup>8</sup>	< 5.0 <sup>8</sup>	< 0.50 <sup>8</sup>	< 0.50 <sup>8</sup>	< 1.2 <sup>8</sup>	< 1.2 <sup>8</sup>	< 2.0 <sup>8</sup>
		15.5' - 16'	< 1.0 <sup>5</sup>	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
B2-7	Jun-00	19.5' - 20'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		4.5' - 5.0'	970 <sup>8</sup>	NA	180 <sup>8</sup>	< 1.2 <sup>8</sup>	< 0.12 <sup>8</sup>	< 0.12 <sup>8</sup>	< 0.40 <sup>8</sup>	< 0.40 <sup>8</sup>	< 0.90 <sup>8</sup>
		10' - 10.5'	12	NA	3.4 <sup>8</sup>	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		12' - 12.5'	< 1.0 <sup>8</sup>	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		19.5' - 20'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
B2-8	Jun-00	4.5' - 5.0'	6.5	NA	16 <sup>8</sup>	< 0.050	< 0.0050	< 0.0050	0.10 <sup>7</sup>	0.10 <sup>7</sup>	0.20 <sup>7</sup>
		5.5' - 6.0'	400 <sup>8</sup>	NA	520 <sup>8</sup>	< 5.0 <sup>8</sup>	< 0.50 <sup>8</sup>	< 0.50 <sup>8</sup>	< 3.0 <sup>8</sup>	< 3.0 <sup>8</sup>	< 5.0 <sup>8</sup>
		10.5' - 11'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		15' - 15.5'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		19.5' - 20'	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
B2-9	Aug-03	5	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		5 (DUP)	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		10	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		15	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		20	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
B2-10	Aug-03	5	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		10	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		15	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		20	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		20	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
B2-12	Aug-03	5	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		10	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		15	190	NA	21	< 0.050	< 0.0050	< 0.012	< 0.10	< 0.020	< 0.10
		20	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		20	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
B2-12A	Aug-03	5	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		10	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		15	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		20	< 1.0	NA	< 1.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.0050
		20	8.5	NA	120	< 1.0	< 0.10	< 0.10	< 0.50	< 0.10	< 0.80
		20	900	NA	3.0	< 0.050	< 0.0050	< 0.0050	< 0.0050	< 0.0050	< 0.015

Cont.

**TABLE 2**  
**HISTORIC SOIL ANALYTICAL RESULTS - UST Hold #1, 2, 3, 4**  
**BLUE LAKE FOREST PRODUCTS**

**TABLE 2 (Cont.)**

Boring	Sample Interval (ft)	TPH-D: Silica Gel Clean-up / Pre-cleaned, (ppm)	TPH-MO (ppm)	TPH-G (ppm)	MTBE (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl- benzene (ppm)	m,p Xylene (ppm)	o Xylene (ppm)
B2-12B	10	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	15	5.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	20	600	NA	23	<0.050	<0.0050	<0.0050	<0.0050	<0.010	<0.040
B2-12C	5	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	10	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.020	<0.010	<0.030
	15	170	NA	13	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	20	180	NA	9.9	<0.050	<0.0050	<0.0050	<0.010	<0.0050	<0.020
B2-13	5	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	10	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	15	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	20	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-13A	5	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	10	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	15	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	20	<1.0	NA	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-11-5	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-11-10	10	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-11-15	15	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-11-20	20	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-11-25	25	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-12-5.5	5.5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-12-10	10	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-12-15	15	4.100 <sup>1</sup>	950 <sup>10</sup>	130 <sup>8</sup>	<1.0 <sup>8</sup>	<1.0 <sup>8</sup>	<1.0 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>
MW-12-20.5	20.5	11 <sup>1</sup>	<10	4.0 <sup>8</sup>	<0.050	<0.0050	<0.0050	<0.010 <sup>7</sup>	<0.010 <sup>7</sup>	<0.010 <sup>7</sup>
MW-12-25	25	2.700 <sup>1</sup>	690 <sup>10</sup>	8.9 <sup>8</sup>	<0.050	<0.0050	<0.0050	<0.050 <sup>7</sup>	<0.050 <sup>7</sup>	<0.050 <sup>7</sup>
MW-13-6	6	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-13-12	12	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-13-15	15	610 <sup>1</sup>	150 <sup>10</sup>	170 <sup>8</sup>	<1.0 <sup>8</sup>	<1.0 <sup>8</sup>	<1.0 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>	<0.50 <sup>8</sup>
MW-13-20	20	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-13-25	25	6.5 <sup>1</sup>	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-14-5	5	20 <sup>1</sup>	<10	3.5 <sup>8</sup>	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-14-10	10	1.1 <sup>1</sup>	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-14-15.5	15.5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-14-22	22	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-14-25	25	3.5 <sup>1</sup>	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-14-5	5	<1.0	10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-14-5.75	5.75	<1.0	13	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-15-5	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-16-5	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-17-5	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-16-5b	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-16-5.5b	5.5	<1.5 <sup>11</sup>	54	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-17-5b	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
B2-17-5.5b	5.5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-15-5	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-15-10	10	950 <sup>1</sup>	130 <sup>10</sup>	830 <sup>8</sup>	<0.50	<0.050 <sup>13</sup>	<4.0 <sup>13</sup>	<10 <sup>13</sup>	<5.0 <sup>13</sup>	<10 <sup>13</sup>
MW-15-15	15	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-15-20	20	<1.0	<10	4.1 <sup>12</sup>	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-16-5	5	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-16-10	10	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-16-15	15	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
MW-16-20	20	<1.0	<10	<1.0	<0.050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050



TABLE 2  
HISTORIC SOIL ANALYTICAL RESULTS - UST Hold #1, 2, 3, 4  
BLUE LAKE FOREST PRODUCTS

\* TPH-D by EPA 8015, BTEX by EPA Method 8020.

A Total Xylenes by EPA Method 8020.

TPH-Diesel analysis by EPA 3550/GC/FID using a silica gel clean-up, however, due to low surrogate recovery in many such analysis, a "pre-cleaned" standard TPH-D analysis was also performed, as denoted in results as [w/ silica gel / "pre-cleaned"]. All diesel results represent TPH-Gas analysis by EPA 8021B/6035.

- 1 Sample contains material similar to degraded or weathered diesel
- 2 Contained material in the diesel range of molecular weights and beyond. Suggests presence of oil heavier than diesel
- 3 Surrogate could not be quantified due to sample dilution.
- 4 Contained material beyond diesel range, suggests presence of an oil heavier than diesel, the amount of which was not included in the reported result.
- 5 The low surrogate recovery may be due to matrix interference.
- 6 Sample does not have the typical pattern of fresh gasoline, result reported represents the amount of material in gasoline range.
- 7 Some reporting limits raised due to matrix interference.
- 8 Samples diluted and the reporting limits raised additionally due to matrix interference.
- 9 The surrogate sample could not be quantified due to matrix
- 10 Sample does not have the typical pattern of fresh motor oil. The material is lighter than motor oil. However, the result reported represents the amount of material in the motor oil range.
- 11 Due to contaminant present in the method blank, the reporting limit was raised.
- 12 Sample does not represent a peak pattern consistent with that of gasoline. The peaks elute toward the end of the gasoline range. In the laboratories judgement, the material appears to be a product heavier than gasoline.  
Due to differences in the purging efficiency of these heavier materials the results may be variable. The reported results represent the amount of material in the gasoline range.
- 13 Samples diluted and the reporting limits raised additionally due to matrix interference. These samples also had results as ND with a dilution due to matrix interference.

**TABLE 3**  
**SOIL ANALYTICAL RESULTS COLLECTED DURING OVEREXCAVATION**  
**BLUE LAKE FOREST PRODUCTS**

Boring	Date	TPHO (ppm)	TPH-MO (ppm)	TPH-G (ppm)	MTBE (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	m,p-Xylenes (ppm)	o-Xylene (ppm)	Tert-butyl alcohol (TBA)	D-isopropyl ether (DIPE)	Et-butyl ether (ETBE)	Tert-amyl methyl ether (TAME)
BLFP-1-10	8/17/04	2.0 <sup>1</sup>	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-2-6	8/17/04	35	280	3.8 <sup>2</sup>	<0.050	<0.050	<0.050	<0.050	<0.050	<0.010 <sup>3</sup>	NT	NT	NT	NT
BLFP-3-10	8/17/04	1,400 <sup>3</sup>	200 <sup>4</sup>	440 <sup>2</sup>	<0.50 <sup>4</sup>	<0.50 <sup>4</sup>	<0.50 <sup>4</sup>	<0.50 <sup>4</sup>	<2.0 <sup>4</sup>	<5.0 <sup>4</sup>	NT	NT	NT	NT
BLFP-3-15	8/17/04	1,200 <sup>3</sup>	100 <sup>4</sup>	500 <sup>2</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<2.4 <sup>4</sup>	<2.8 <sup>4</sup>	<7.0 <sup>4</sup>	NT	NT	NT	NT
BLFP-4-10	8/17/04	2,400 <sup>3</sup>	400 <sup>4</sup>	650 <sup>2</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<2.5 <sup>4</sup>	<8.0 <sup>4</sup>	<2.4 <sup>4</sup>	<6.0 <sup>4</sup>	<0.50	<0.020	<0.020	<0.020
BLFP-5-10	8/19/04	1,400 <sup>3</sup>	230 <sup>4</sup>	850 <sup>2</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<3.4 <sup>4</sup>	<30 <sup>4</sup>	<3.4 <sup>4</sup>	<8.0 <sup>4</sup>	<0.50	<0.020	<0.020	<0.020
BLFP-6-10	8/19/04	3,400 <sup>3</sup>	540 <sup>4</sup>	2,400 <sup>2</sup>	<5.0 <sup>4</sup>	<5.0 <sup>4</sup>	<15 <sup>4</sup>	<30 <sup>4</sup>	<12 <sup>4</sup>	<30 <sup>4</sup>	<0.50	<0.020	<0.020	<0.020
BLFP-7-10	8/19/04	3.0 <sup>1</sup>	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-8-13	8/21/04	1,300	140	240	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<1.8 <sup>4</sup>	<0.50 <sup>4</sup>	<1.7 <sup>4</sup>	NT	NT	NT	NT
BLFP-7-20	8/22/04	5.0	<10 <sup>3</sup>	3.2	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-9-20	8/22/04	86 <sup>3</sup>	13 <sup>4</sup>	10 <sup>2</sup>	<0.050	<0.050	<0.050	<0.010 <sup>3</sup>	<0.050	<0.020 <sup>3</sup>	<0.50	<0.020	<0.020	<0.020
BLFP-10-10	8/22/04	1,700 <sup>3</sup>	200 <sup>4</sup>	150 <sup>2</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<10 <sup>4</sup>	<7.0 <sup>4</sup>	<0.10 <sup>4</sup>	<0.60 <sup>4</sup>	NT	NT	NT	NT
BLFP-11-12	8/22/04	2,800 <sup>3</sup>	330 <sup>4</sup>	420 <sup>2</sup>	<5.0 <sup>4</sup>	<5.0 <sup>4</sup>	<5.0 <sup>4</sup>	<15 <sup>4</sup>	<0.50 <sup>4</sup>	<2.0 <sup>4</sup>	NT	NT	NT	NT
BLFP-12-20	8/23/04	2.0 <sup>1,4</sup>	<10 <sup>3</sup>	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-13-8	8/23/04	3.2 <sup>1,4</sup>	<10 <sup>3</sup>	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-14-15	8/24/04	3,800 <sup>3</sup>	400 <sup>4,5</sup>	350 <sup>2</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<0.50 <sup>4</sup>	<1.8 <sup>4</sup>	<0.50 <sup>4</sup>	<1.4 <sup>4</sup>	NT	NT	NT	NT
BLFP-15-5	8/24/04	5,200 <sup>3</sup>	770 <sup>4,5</sup>	1,400 <sup>2</sup>	<5.0 <sup>4</sup>	<5.0 <sup>4</sup>	<4.0 <sup>4</sup>	<15 <sup>4</sup>	<6.0 <sup>4</sup>	<15 <sup>4</sup>	NT	NT	NT	NT
BLFP-16-13	8/24/04	<1.0	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NT	NT	NT	NT
BLFP-17-10	8/25/04	2,400 <sup>3</sup>	<500 <sup>4</sup>	800 <sup>2</sup>	<1.0 <sup>4</sup>	<1.0 <sup>4</sup>	<2.0 <sup>4</sup>	<7.5 <sup>4</sup>	<3.2 <sup>4</sup>	<6.5 <sup>4</sup>	NT	NT	NT	NT
BLFP-18-13	8/25/04	2,000 <sup>3</sup>	<500 <sup>4</sup>	600 <sup>2</sup>	<0.50 <sup>4</sup>	<0.50 <sup>4</sup>	<1.8 <sup>4</sup>	<6.5 <sup>4</sup>	<3.0 <sup>4</sup>	<6.5 <sup>4</sup>	NT	NT	NT	NT
BLFP-19-20	8/25/04	8.1 <sup>3</sup>	25 <sup>4</sup>	180 <sup>2</sup>	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-21-5	8/28/04	430 <sup>3</sup>	450 <sup>4</sup>	400 <sup>2</sup>	<0.50 <sup>4</sup>	<0.50 <sup>4</sup>	<1.2 <sup>4</sup>	<2.5 <sup>4</sup>	<1.5 <sup>4</sup>	<2.5 <sup>4</sup>	NT	NT	NT	NT
BLFP-22-11	8/28/04	4,300 <sup>3</sup>	<10 <sup>4</sup>	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-23-10	8/30/04	<1.0	480 <sup>4</sup>	1,400 <sup>2</sup>	<0.50 <sup>4</sup>	<0.50 <sup>4</sup>	<3.0 <sup>4</sup>	<10 <sup>4</sup>	<4.0 <sup>4</sup>	<10 <sup>4</sup>	NT	NT	NT	NT
BLFP-24-10	8/30/04	<1.0	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-25-17	8/30/04	<1.0	300 <sup>15</sup>	79 <sup>2</sup>	<0.10 <sup>4</sup>	<0.10 <sup>4</sup>	<0.020 <sup>4</sup>	<0.060 <sup>4</sup>	<0.030 <sup>4</sup>	<0.060 <sup>4</sup>	<0.50	<0.020	<0.020	<0.020
BLFP-26-8	8/30/04	1,700 <sup>3</sup>	81 <sup>4</sup>	9.9 <sup>2,3</sup>	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-27-10	7/11/04	<1.0	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-28-14	7/11/04	830	160 <sup>1,5,11</sup>	180 <sup>2,3</sup>	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-29-15	7/27/04	<1.0	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-30-18	7/27/04	<1.0	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
BLFP-31-7	7/27/04	<1.0	<10	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
Stockpile-NW-1	9/8/04	1,300	310	290	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
Stockpile-NW-2	9/8/04	1,200	300	240	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
Stockpile-NW-3	9/8/04	1,100	280	330	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
Stockpile-SW-1	9/8/04	1,100	43	190	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
Stockpile-SW-2	9/8/04	1,000	230	200	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
Stockpile-NE-1	9/8/04	1,000	210	220	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
Stockpile-NE-2	9/8/04	1,000	210	220	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-1-092404	9/24/04	960	<500 <sup>3</sup>	130	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-2-092404	9/24/04	1,060	<500 <sup>3</sup>	130	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-3-092404	9/24/04	1,260	<500 <sup>3</sup>	160	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-4-092404	9/24/04	950	94	94	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-5-092404	9/24/04	1,000	<500 <sup>3</sup>	140	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-6-092404	9/24/04	840	<500 <sup>3</sup>	130	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-7-092404	9/24/04	1,200	<500 <sup>3</sup>	100	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-8-092404	9/24/04	1,100	<500 <sup>3</sup>	190	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.50	<0.020	<0.020	<0.020
TSPT-Spread-1-092804	9/28/04	640	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
TSPT-Spread-2-092804	9/28/04	780	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BLFP-3-DUP	10/14/04	730	270	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BLFP-14-DUP	10/14/04	580	250	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT
BLFP-20-DUP	10/14/04	270	120	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

TPH-MO by EPA 3530.

1. Confirmed minimal in the diesel range of molecular weights, but the material does not exhibit the peak pattern typical of diesel oil.

2. Sample does not represent a peak pattern consistent with that of gasoline. The peaks elute toward the end of the gasoline range. The results reported represent the amount of material in the gasoline range.

3. Sample diluted and the reporting limit raised additionally due to matrix interference.

4. Sample contains material similar to degraded or weathered diesel oil.

5. Sample does not have the typical pattern of fresh motor oil. However, the result reported represents the amount of material in the motor oil range.

6. The laboratory could not duplicate the result. The laboratory control sample duplicate (LCS) recovery was slightly below the acceptance limit for diesel and motor oil.

7. The laboratory could not duplicate the result. The laboratory control sample duplicate (LCS) recovery was slightly below the acceptance limit for diesel and motor oil.

8. The relative difference (RD) for the laboratory control samples was above the upper acceptance limit for Motor Oil. This indicates that the sample results could be variable.

9. Sample contains material similar to degraded or weathered diesel oil, does not have the typical pattern of fresh motor oil, and is lighter than motor oil. However, the results reported represent the amount of material in the

10. Sample contains material similar to degraded or weathered diesel oil, does not have the typical pattern of fresh motor oil, and is lighter than motor oil. However, the results reported represent the amount of material in the

11. The laboratory control sample (LCS) recovery was above the upper acceptance limit for motor oil. The laboratory control sample duplicate (LSD) recovery was within the acceptance limits; therefore, the data were accepted

**TABLE 4**  
**GROUNDWATER ANALYTICAL RESULTS**  
BLUE LAKE FOREST PRODUCTS

Sample	Date	TPH-Diesel (ppb)	TPH-MO (ppb)	TPH-Gas (ppb)	MTBE Methyl tert-butyl ether (ppb)	TBA Tert-butyl alcohol	DIPE Di-isopropyl ether	ETBE Ethyl tert-butyl ether	TAME Tert-amyl methyl ether	Benzene (ppb)	Toluene (ppb)	Ethyl- Benzene (ppb)	m,p Xylene (ppb)	"o" Xylene (ppb)	Lead (ppb)
MW-11	12/2/04	< 50 <sup>2</sup>	NT	< 50	< 1.0	< 10	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5
	3/26/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	6/15/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	9/19/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	12/21/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	3/14/06	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
MW-12	12/3/04	5700 <sup>1,2</sup>	NT	280 <sup>3</sup>	< 1.0	< 10	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5
	3/26/05	190 <sup>1</sup>	< 170	72 <sup>3</sup>	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	6/16/05	590 <sup>1</sup>	< 170	56 <sup>3</sup>	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	9/19/05	790 <sup>1</sup>	< 170	89 <sup>2</sup>	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	12/21/05	57 <sup>1,2</sup>	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	3/14/06	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	1.1	< 0.50	< 0.50	< 0.50	< 0.50	NT
MW-13	12/3/04	580 <sup>1,2</sup>	NT	220 <sup>3</sup>	< 1.0	< 10	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5
	3/26/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	6/16/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	9/19/05	100 <sup>1</sup>	< 170	73 <sup>3</sup>	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	12/21/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	3/14/06	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
MW-14	12/3/04	< 50 <sup>2</sup>	NT	< 50	< 1.0	< 10	< 1.0	< 1.0	< 1.0	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	< 5
	3/26/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	6/15/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	9/19/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	12/21/05	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT
	3/14/06	< 50	< 170	< 50	< 3.0	NT	NT	NT	NT	< 0.50	< 0.50	< 0.50	< 0.50	< 0.50	NT

**Notes:**

- 1 Sample contains material similar to degraded or weathered diesel oil.
- 2 The laboratory control sample (LCS) and the laboratory control sample duplicate (LCS-D) recoveries were above the upper acceptance limit for diesel. These recoveries indicate that the sample results may be erroneously high. There were no detectable levels of the analyte in the samples; therefore, the data were accepted.
- 3 Samples do not present a peak pattern consistent with that of gasoline. The peaks elute toward the end of the gasoline range. The material appears to be a product heavier than gasoline. The reported results represent the amount of material in the gasoline range.

**TABLE 5**  
**GROUNDWATER GRADIENT**  
**BLUE LAKE FOREST PRODUCTS**

<i>Date of Data Collection</i>	<i>Groundwater Flow Direction</i>	<i>Degrees Azimuth</i>	<i>Slope in Feet Per 100 Feet</i>
2-Dec-04	South	179.88	1.29
26-Mar-05	South-Southwest	196.35	1.85
15-Jun-05	South	179.90	1.07
19-Sep-05	South	178.41	1.43
21-Dec-05	South-Southwest	200.30	1.79
14-Mar-06	South-Southwest	194.84	2.19
Average		188.28	1.60
Standard Deviation		9.91	0.41

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**Appendix D**  
**Winzler and Kelly's Standard Operating Procedures**

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# WINZLER & KELLY CONSULTING ENGINEERS

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## STANDARD OPERATING PROCEDURES for SOIL BORING AND MONITORING WELL INSTALLATION

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### 1. Objective

To establish accepted procedures for sampling soil and water from hollow-stem auger or direct push borings.

### 2. Background

During subsurface investigations it is necessary to obtain discrete soil and water samples from below the ground surface. Typically, heavy equipment is necessary to obtain these samples. This SOP establishes the procedures for collecting soil and groundwater samples from borings.

### 3. Personnel Required and Responsibilities

Project Manager: The Project Manager (PM) is responsible for ensuring that field personnel have been trained in the use of these procedures and for verifying that drilling water and soil sampling activities are performed in compliance with this SOP.

Project Scientist: The responsible professional in charge of the field work must determine the exact location and depth of each boring, and decide on the sampling interval. The project scientist must collect samples, prepare them for transport to the laboratory, and record lithologic and other observations. The Project Scientist is responsible for complying with this SOP.

Driller (Subcontractor): An appropriately licensed (C57) contractor must be equipped with truck- or tractor-mounted auger or direct push boring equipment and an OSHA-certified crew. The Driller is responsible for the safety and conduct of their employees. In addition, the Driller is responsible for the installation of borings according to the details specified in the Workplan. The Driller is responsible for maintaining industry standards and complying with the contract.

### 4. Equipment Required

Truck or tractor mounted auger or direct push rig

- Split spoon sampler or direct push sample barrel
- Brass or stainless steel sample liners and plastic end caps
- Aluminum foil or Teflon sheeting
- Steam cleaner
- Containers for rinsate
- Disposable gloves
- Sample labels
- Munsell color charts
- Putty knife

- Boring logs
- Photoionization detector (PID)
- Ice/ice chest
- Sealable plastic storage bags
- Indelible marker

## 5. Procedure

Borings will be installed using hollow-stem augers, or 2-inch diameter pushrods. Borings will extend to the groundwater surface or deeper as specified by the project requirements. Typically, soil samples will be obtained either continuously, or at a minimum of 5-foot intervals for lithologic logging, on site field screening, and potential chemical analyses. Additional soil samples will be obtained at any notable changes in lithology and at any obvious areas of contamination.

- Soil samples will be collected in a split spoon sampler or direct-push sample barrel lined with clean brass or stainless steel sleeves. A six-inch interval of the sample will be capped with aluminum foil or Teflon sheeting and plastic end caps, labeled, wrapped in a plastic storage bag and stored in a cooler, on ice. Sample numbers and depths will be noted on the boring logs.
- The remaining sample will be used for color and soil type classification using the Unified Soil Classification System and Munsell color charts. A portion of each sample will be field-screened with a photo-ionization detector. Results of classification and field screening will be recorded on the boring logs.
- Sample equipment will be decontaminated with Alconox soap and distilled water between sampling intervals.
- Augers or push casing will be steam cleaned between each boring.
- If a hydropunch sampler is to be used to collect water samples, borings will terminate at the groundwater surface. A hydropunch-type groundwater sampling device will be lowered into the hollow stem augers or the drive casing, and driven three to four feet into the aquifer. Groundwater will be allowed to flow into the hydropunch.
- If a hydropunch type sampler is not used, the boring will be extended 3 to 5 feet into the aquifer. The augers or drive casing will be pulled back to allow for water to enter the boring. If caving of the bore hole occurs, temporary PVC casing may be lowered into the drive casing or hollow stem augers prior to retraction of the drive casing.
- Groundwater will be sampled using a small diameter stainless steel or disposable polyethylene bailer.
- Groundwater samples will be transferred from the bailer to appropriate size/type containers with the appropriate preservatives, as required by the project needs. Precautions will be taken to avoid capturing air bubbles in the samples. Sample containers will be labeled, wrapped in plastic bags and stored in a cooler, on ice. The water samples will be transported to a State-certified laboratory for the appropriate chemical analyses.
- Soil borings will be closed by filling to the surface with a cement/bentonite grout mixture, not exceeding 5% bentonite. The locations of each boring will be marked with spray paint.

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## WINZLER & KELLY CONSULTING ENGINEERS

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### STANDARD OPERATING PROCEDURES for SOIL AND WATER SAMPLING FROM A BORING

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1. **Objective**

To establish accepted procedures for sampling soil and water from hollow-stem auger or direct push borings.

2. **Background**

During subsurface investigations it is necessary to obtain discrete soil and water samples from below the ground surface. Typically, heavy equipment is necessary to obtain these samples. This SOP establishes the procedures for collecting soil and groundwater samples from borings.

3. **Personnel Required and Responsibilities**

Project Manager: The Project Manager (PM) is responsible for ensuring that field personnel have been trained in the use of these procedures and for verifying that drilling water and soil sampling activities are performed in compliance with this SOP.

Project Scientist: The responsible professional in charge of the field work must determine the exact location and depth of each boring, and decide on the sampling interval. The project scientist must collect samples, prepare them for transport to the laboratory, and record lithologic and other observations. The Project Scientist is responsible for complying with this SOP.

Driller (Subcontractor): An appropriately licensed (C57) contractor must be equipped with truck- or tractor-mounted auger or direct push boring equipment and an OSHA-certified crew. The Driller is responsible for the safety and conduct of their employees. In addition, the Driller is responsible for the installation of borings according to the details specified in the Workplan. The Driller is responsible for maintaining industry standards and complying with the contract.

4. **Equipment Required**

- Truck or tractor mounted auger or direct push rig
- Split spoon sampler or direct push sample barrel
- Brass or stainless steel sample liners and plastic end caps
- Aluminum foil or teflon sheeting
- Steam cleaner
- Containers for rinsate
- Disposable gloves
- Sample labels
- Munsell color charts
- Putty knife



- Boring logs
- Photoionization detector (PID)
- Ice/ice chest
- Sealable plastic storage bags
- Indelible marker

## 5. Procedure

Borings will be installed using hollow-stem augers, or 2-inch diameter pushrods. Borings will extend to the groundwater surface or deeper as specified by the project requirements. Typically, soil samples will be obtained either continuously, or at a minimum of 5-foot intervals for lithologic logging, on site field screening, and potential chemical analyses. Additional soil samples will be obtained at any notable changes in lithology and at any obvious areas of contamination.

- Soil samples will be collected in a split spoon sampler or direct-push sample barrel lined with clean brass or stainless steel sleeves. A six-inch interval of the sample will be capped with aluminum foil or teflon sheeting and plastic end caps, labeled, wrapped in a plastic storage bag and stored in a cooler, on ice. Sample numbers and depths will be noted on the boring logs.
- The remaining sample will be used for color and soil type classification using the Unified Soil Classification System and Munsell color charts. A portion of each sample will be field-screened with a photo-ionization detector. Results of classification and field screening will be recorded on the boring logs.
- Sample equipment will be decontaminated with Alconox soap and distilled water between sampling intervals.
- Augers or push casing will be steam cleaned between each boring.
- If a hydropunch sampler is to be used to collect water samples, borings will terminate at the groundwater surface. A hydropunch-type groundwater sampling device will be lowered into the hollow stem augers or the drive casing, and driven three to four feet into the aquifer. Groundwater will be allowed to flow into the hydropunch.
- If a hydropunch type sampler is not used, the boring will be extended 3 to 5 feet into the aquifer. The augers or drive casing will be pulled back to allow for water to enter the boring. If caving of the bore hole occurs, temporary PVC casing may be lowered into the drive casing or hollow stem augers prior to retraction of the drive casing.
- Groundwater will be sampled using a small diameter stainless steel or disposable polyethylene bailer.
- Groundwater samples will be transferred from the bailer to appropriate size/type containers with the appropriate preservatives, as required by the project needs. Precautions will be taken to avoid capturing air bubbles in the samples. Sample containers will be labelled, wrapped in plastic bags and stored in a cooler, on ice. The water samples will be transported to a State-certified laboratory for the appropriate chemical analyses.
- Soil borings will be closed by filling to the surface with a cement/bentonite grout mixture, not exceeding 5% bentonite. The locations of each boring will be marked with spray paint.

# WINZLER & KELLY CONSULTING ENGINEERS

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## STANDARD OPERATING PROCEDURES for MONITORING WELL INSTALLATION AND DEVELOPMENT

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### SECTION I. MONITORING WELL INSTALLATION

#### 1. Objective

To establish accepted procedures for the installation of monitoring wells for sites under investigation or remediation from impacts with chemical contaminants.

#### 2. Background

Monitoring wells are used for subsurface investigation and remediation projects. Well-designed monitoring wells provide data on groundwater movement, groundwater quality, seasonal water table fluctuations, rates of natural attenuation, and changes in contaminant concentrations through time. Monitoring wells are installed in accordance with the California Well Standards (Department of Water Resources Bulletin 74-90) and with the appropriate lead agency guidelines.

#### 3. Personnel Utilized and Responsibilities

Registered Professional: A Registered Professional (RP) is responsible for ensuring that the monitoring wells are properly installed, that the possibility of cross contamination between aquifers has been minimized, and that the well installation will achieve its desired purpose. The RP oversees the project and ensures that field personnel have been trained in the use of this procedure.

Project Scientist: The responsible professional in charge of fieldwork must determine the location and depth of each well, and decide on the sampling interval. The project scientist oversees installation of the well, collects samples and prepares them for transport to the laboratory, and records lithologic and other observations. The Project Scientist is responsible for site safety and health and compliance with this SOP and for submittal of the well completion report to the Department of Water Resources.

Staff Technician: A staff technician has 0.5 to 5 years experience logging borings, installing and developing monitoring wells. The staff technician is responsible for complying with these procedures, lithologic logging, collection of samples, and field documentation, and development of wells prior to sampling. The staff technician will call the RP with field observations and contaminant data to obtain approval of final well design.

Driller (Subcontractor): An appropriately licensed (C57) drilling contractor must employ an OSHA-certified crew. The Driller is responsible for the safety and conduct of their employees and complying with the project specifications described in the Workplan and

contract. All drilling and sampling methods will be consistent with ASTM Method D-1452-80, and local, state, and federal regulations. The Driller is responsible for installing monitoring wells according to pertinent agency standards.

#### **4. Equipment Required**

- Well Installation permit, Access Agreements, and other permits as needed
- Copy of approved Workplan with site Safety Plan included
- Minimum Level D personal protective equipment
- Downhole sampler with brass or stainless steel liners, Teflon sheeting, and end caps
- Photoionization detector (PID) / sealable plastic storage bags
- Boring Log form / Munsell color charts / USCS soil classification system chart
- Sample containers - provided by the laboratory OR
- EnCore<sup>®</sup> Sampling kit and soil cartridge containers
- Sample labels/Indelible marker/Chain of Custody forms
- Disposable gloves
- Ice chest with ice

#### **5. Procedure**

Winzler & Kelly will obtain all permits to perform drilling work unless contractually directed otherwise. Winzler & Kelly will prepare a site Safety and Health Plan detailing project hazards and controls, personnel decontamination, and emergency response procedures.

At least 48 hours before drilling, Winzler & Kelly personnel will contact Underground Services Alert (USA), or similar utility location service, to have subsurface utilities located and marked within the work area previously delineated with white paint. In order to ensure that the locations of subsurface utilities are known, Winzler & Kelly may perform a site inspection, contact individuals familiar with the work site, review as-built drawings, and may employ a private utility locator. When subsurface utilities are suspected, the first five feet of each boring will be advanced using a hand auger or posthole digger.

All monitoring wells are installed using a truck-mounted hollow-stem auger drill rig, unless site conditions require a different drilling method. All drilling equipment will be maintained and inspected daily. A drill rig kill switch mechanism will be operational and within reach of anyone working near the drill.

All down-hole drilling equipment will be cleaned and decontaminated prior to arriving at the site. Working components of the drill rig, drill stems, and augers are steam cleaned between monitoring well locations.

When ever possible, the first boring will be sampled to provide a continuous core to obtain a complete lithologic section of the boring. In subsequent borings, soil samples will be collected at approximately five-foot intervals to the total depth explored. Soil samples may also be collected from differing lithologies or areas of obvious contamination. Samples will be collected using a California-modified split spoon sampler driven 18 to 24 inches into native material beyond the auger bit. The split spoon will be driven using a 140-pound hammer dropped from 30 inches. The

number of blow counts required to drive the sampler each six-inch interval and the volume of soil recovered will be recorded on the well log. If copper or zinc contamination is being investigated, stainless steel liners will be used in lieu of brass.

Metal soil sample tubes selected for laboratory analysis will be covered on both ends with Teflon tape and sealed with plastic end caps. Samples will be labeled, recorded using Chain of Custody documentation, and placed into a chilled cooler for transport to the analytical laboratory. Soil in the remaining tubes will be retained for lithologic description and organic vapor analysis.

Headspace organic vapor analysis will be accomplished by placing a hand sample of soil into a sealable plastic bag and allowing the sample to raise to ambient temperature. The probe of the PID will be used to penetrate the bag to sample the headspace. The peak organic vapor reading is recorded on the well log.

Classify soil types and log observations using the Unified Soil Classification System (ASTM Visual Manual Procedure D 2488-84) and Munsell Soil Color Charts. Include observations on lithology, moisture, density, plasticity, and sample depths on the boring logs as appropriate.

An aquitard or aquiclude (clayey layer), three feet in thickness or greater, encountered beneath a saturated permeable layer, should be considered to be a possible confining layer to deeper aquifers. In order to prevent possible cross-contamination of a deeper aquifer, drilling will be stopped and the project manager or geologist consulted to determine how to proceed.

Soil drill cuttings are stockpiled on plastic and covered with additional plastic to control runoff or stored in 55-gallon DOT approved drums and left on site. Waste soil is sampled and analyzed to prepare a profile necessary for disposal and hauled by a licensed transporter to an appropriate licensed facility. All waste stored on site is labeled at the time of production.

## **6. Well Design and Construction**

All well construction is performed in accordance with Department of Water Resources "California Well Standards" and all requirements of local oversight agencies. Borings for two inch monitoring wells will be a minimum of 8 inches in diameter and a minimum of 10 inches in diameter for four-inch wells. Monitoring wells are constructed of schedule 40 PVC casing unless site geochemistry or contaminant types dictate use of another material. The wells are constructed with factory-cut slots and threaded coupling between casing sections and caps.

The screened portion of the well is positioned so that it extends approximately ten feet into the water-bearing zone and approximately five feet above the maximum expected water elevation. The screened interval may extend less than five feet above the maximum water level to prevent intersection of well screen with the confining layer at the top of a confined aquifer, or where the water table is too shallow to allow for adequate construction of the well seal. Careful consideration should be given to the specific gravity of the contaminants of concern and screening the upper or lower portion of the aquifer.

A graded sand filter pack is placed in the annular space across the screened interval and extended at least one foot above the screen. This additional sand helps to prevent bentonite hole plug from entering the well screen if compaction of the filter pack occurs. The well screen slot size should be capable of retaining 90% of the filter pack material. Typically, 0.010-inch slots are used where

the aquifer material is predominantly clay and /or silt or poorly graded fine sand. A slot size of 0.020 inch is used when the water bearing formation is well-graded medium to coarse sand and/or gravel.

The silica sand filter pack grain size is selected according to aquifer material type as follows:

- For poorly graded fine sand or silt and clay – four times the 70% retained grain size of the formation;
- For medium to coarse sand, gravel or well-graded sediments – six times the 70% retained grain size.

Since results of particle size sieve analysis may not be available, filter pack selection may be performed on the basis of stratigraphy, using the finest grain size unit to be encountered in the screened interval as the defining particle size. Commonly selected grades of filter sand are 1/20 (or equivalent) for use with 0.010 inch slots and 2/12 or 2/16 (or equivalent) for use with 0.020 inch slotted screens.

The filter pack should be added slowly to fill the annular space between the well screen and the sides of the boring. The filter pack sand can be emplaced either through the hollow stem of the auger as the auger is removed or in the open hole surrounding the well casing if soil conditions permit. Uniform placement of the filter pack must be monitored during placement to ensure that bridging, or formation of an air gap, does not occur. The placement of the filter pack is monitored using a weighted tape measure to gauge the rate of filter sand placement and break any bridges. A bridged filter pack will eventually collapse and possibly result in failure of the bentonite well seal and impair the well surface seal.

A minimum one-foot seal of bentonite is placed above the sand filter pack. The bentonite seal is hydrated by either formation or potable water. Neat cement or a cement/bentonite mixture seals the remaining annular space to the surface. If bentonite is used in the grout mixture, it must not exceed 5% of the mixture, by weight. The grout may be placed using a tremie pipe, if the grout column will be longer than 20 feet or if water is present in the annular space above the bentonite seal.

A watertight locking cap and protective traffic-rated vault is installed on top of each well. The traffic-rated vault will be set in concrete and be raised slightly above the surrounding grade to ensure that rainwater or other drainage water does not pool over the wells.

Well construction details are presented on the soil boring log sheet for each well. Waterproof tags are attached to each well casing to provide data on well identification, installation date, and as-built construction details. Winzler & Kelly completes and submits or determines that adequate information has been provided to the Driller for him to complete and submit the required Well Completion Report to the Department of Water Resources.

The last page of this SOP illustrates a Typical Monitoring Well Construction Detail.

To make well data suitable for inclusion in the State of California GeoTracker GIS network, well location data must be surveyed horizontally to within one meter accuracy using latitude/longitude coordinates and surveyed vertically to within 0.01 foot relative to mean sea level.

## SECTION II. MONITORING WELL DEVELOPMENT

### 1. Objective

To establish accepted procedures for conducting well development prior to purging and sampling activities in accordance with standard practices by engineering professionals.

### 2. Background

Following the installation of a monitoring well, it is necessary to develop the well in order to adequately remove the silt and clay (fines) from the filter pack material and in the immediate proximity of the well, in order to minimize the infiltration of fines throughout the life of the monitoring well.

### 3. Personnel Required and Responsibilities

Project Manager: The Project Manager (PM) is responsible for ensuring that field personnel have been trained in the use of these procedures and for verifying that the development procedures are performed in compliance with this SOP. At a minimum, the PM will maintain contact with the client or contractor involved, will be available by phone during the field activities and will review field notes for completeness.

Field Geologist/Field Engineer/Soil Scientist/Technician: The field staff person assigned to the project is responsible for complying with this SOP. Responsibilities include preparation for field activities, ensuring equipment is in working order and clean prior to the field event, providing adequate field documentation of events, observations, readings, measurements, volume of water, and overall development activities.

### 4. Equipment Required

- Tool Box
- Disposable gloves
- Decontamination supplies
- Water Level Meter/tape and paste/other device
- Measuring tape
- Indelible marker/Drum labels
- Surge Block
- Development pump and hoses OR bailers and line
- Several 5-gallon buckets with 1 gallon increments noted
- 55-gallon drums or other water storage facility
- Well Development Forms

### 5. Procedure

After completion of monitoring well installation, and no sooner than 48 hours following emplacement of the well seals, the well shall be developed as described below. Prior to insertion in any well, all equipment will either be decontaminated or will be deemed clean, or previously unused, by the manufacturer.

- Open all monitoring wells at the site and allow to equilibrate approximately 15 minutes. Denote time and visual observations regarding well access, condition, security, etc. in logbook.

- Obtain initial depth to groundwater level readings from the point of survey mark, or from the North side of the top of the PVC casing, if not point of survey mark is present. Readings will be measured to the nearest 0.01 foot. Denote time and readings in logbook and on forms provided.
- Obtain depth to casing bottom for each well. Readings will be measured to the nearest 0.01 foot. Denote readings in logbook, and compare with boring log information.
- Calculate the volume of standing water in each monitoring well. Denote the volume calculated for each well in logbook and/or on forms provided.
- Alternate surging/swabbing of the screened interval and purging of the water:
  - Surging/Swabbing: Using either a surge block, the purge pump, or a heavy bailer, swab the screened portion of the well by lowering the surge equipment to the bottom of the well, rapidly raising and lowering the equipment in 2-foot intervals in a plunger-like fashion. This should force water in and out of the screened interval. Repeat the surge/swab at least 10 times at each 2-foot interval. Then swab the next two-foot screened interval. Follow each round of surging by purging.
  - Purging: Following each round of surging of the screened interval, the well shall be purged of water. Be sure to lower the bailer to the bottom of the well in order to "grab" the silts and clays which have settled to the bottom of the well. If a well has a large portion of fines, then the purging may be performed only using a bailer, since silts and clays can cause malfunction in the pumps.
- **Please note, to develop the entire screened interval, water must be present over the entire length of screen. In wells with little water or with very poor recharge, distilled water may be added to the well to ensure adequate development of the well. If water is added, the volume of water added must be documented, and the water being used should be sampled for the presence of contaminants.**
- Continue the process until the entire screened interval has been adequately swabbed and purge water is relatively clear of fine material.
- Contain all purge water in the drums or other containers provided. Denote the date, time and origin of the water on the containers. Include calculation of the volume of water removed from each well and observations of the presence of sediments and color/odor of water, etc., in the logbook and on the forms provided.
- Obtain final depth to groundwater level readings from the point of survey mark, or from the North side of the top of the PVC casing, if not point of survey mark is present. Readings will be measured to the nearest 0.01 foot. Denote time and readings in logbook and on forms provided.
- Conduct final decontamination procedures of any field equipment that is not disposable.
- Close and secure each well upon completion of field activities. Ensure that all water storage containers are closed and secured and that the site is clean.

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## **Appendix E**

### **Boring Logs and Field Notes**



# BORING LOG

PROJ. NAME: BLFP		PROJECT NO.: 00142803.11400		Sheet 1 of 1
METHOD OF DRILL: HAND AUGER		LOCATION: SOUTH OF DIP TANK BUILDING		
SAMPLER: DIRECT PUSH	OD:	ID:	LOGGED BY: CE	BORING #: B2-14
BORING DIAMETER: 3.0"		DATE STARTED: 04/25/06		TIME: 10:30
DRILLING CO.:		DATE COMPLETED: 04/25/06		TIME: 3:20
C57 LIC. #:		TOTAL DEPTH OF BORING: 5.75 ft.		
DRILLER: COLLEEN		DEPTH TO GROUNDWATER: 5.56 ft.		
HAMMER WGT.: lbs.	HAMMER DROP: inches		SURFACE CONDITIONS: FILL	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1					GM	COBBLEY FILL MATERIAL	5Y 3/2	DRY	LOOSE	0		
2						COBBLEY FILL MATERIAL	10YR 3/1	DRY	LOOSE	0		
3							10YR 3/4	MOIST	LOOSE	0		
4					GC	LARGE COBBLE UP TO 5"	7.5YR 4/4	MOIST	M. DENSE	0		
5		X		B2-14-5			10YR 4/6	MOIST	DENSE	0		
		X		B2-14-5.75			10YR 4/6	WET	DENSE	0		GROUNDWATER @ 5.56'

# BORING LOG

PROJ. NAME: BLFP		PROJECT NO.: 00142803.11400		Sheet 1 of 1
METHOD OF DRILL: HAND AUGER		LOCATION: SOUTH OF DIP TANK BUILDING		
SAMPLER: DIRECT PUSH	OD:	ID:	LOGGED BY: CE	BORING #: B2-15
BORING DIAMETER: 3.0"		DATE STARTED: 04/25/06		TIME: 3:30
DRILLING CO.:		DATE COMPLETED: 04/26/06		TIME: 10:30
C57 LIC. #:		TOTAL DEPTH OF BORING: 5.63 ft.		
DRILLER: COLLEEN		DEPTH TO GROUNDWATER: 5.5 ft.		
HAMMER WGT.: lbs.	HAMMER DROP: inches		SURFACE CONDITIONS: FILL	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1		X		B2-15-5	GM	COBBLEY FILL MATERIAL	5Y 3/2	DRY	LOOSE	0		GROUNDWATER @ 5.5'
2						COBBLEY FILL MATERIAL	10YR 3/1	DRY	LOOSE	0		
3							10YR 3/4	MOIST	LOOSE	0		
4							7.5YR 4/4	MOIST	M. DENSE	0		
5							10YR 4/6	MOIST	DENSE	0		
							10YR 4/6	WET	DENSE	0		

# BORING LOG

PROJ. NAME: BLFP		PROJECT NO.: 00142803.11400		Sheet 1 of 1
METHOD OF DRILL: HOLLOW STEM AUGER		LOCATION: SOUTH OF DIP TANK BUILDING		
SAMPLER: SPLIT SPOON	OD: 2.75	ID: 2.0	LOGGED BY: CE	BORING #: B2-16b
BORING DIAMETER: 8.0"		DATE STARTED: 05/15/06		TIME: 5:40
DRILLING CO.: MITCHELL ENV. DRILLING CORP.		DATE COMPLETED: 05/15/06		TIME: 6:15
C57 LIC. #: 672617		TOTAL DEPTH OF BORING: 6.50 ft.		
DRILLER: EDDY MITCHELL		DEPTH TO GROUNDWATER: 5.9 ft.		
HAMMER WGT.: 140 lbs.	HAMMER DROP: 30 inches		SURFACE CONDITIONS: FILL	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1					GM	GRAVELLY FILL	10YR 5/8	DRY	LOOSE			
2						GRAVELLY SAND SILT	10YR 3/1	DRY	LOOSE			
3							10YR 3/4	MOIST	LOOSE			
4					GC	CLAYEY GRAVEL	7.5YR 4/4	MOIST	M. DENSE			
5		X		B2-16-5b		CLAYEY GRAVEL	10YR 4/6	MOIST	DENSE			
6		X		B2-16-6.5b		CLAYEY GRAVEL W/LARGE COBBLES	10YR 4/6	WET	DENSE			GROUNDWATER @ 5.9'

# BORING LOG

PROJ. NAME: BLFP		PROJECT NO.: 00142803.11400		Sheet 1 of 1
METHOD OF DRILL: HOLLOW STEM AUGER		LOCATION: SOUTH OF DIP TANK BUILDING		
SAMPLER: SPLIT SPOON	OD: 2.75	ID: 2.5	LOGGED BY: CE	BORING #: B2-17b
BORING DIAMETER: 8.0"		DATE STARTED: 05/15/06		TIME: 4:45
DRILLING CO.: MITCHELL ENV. DRILLING CORP.		DATE COMPLETED: 05/15/06		TIME: 5:30
C57 LIC. #: 672617		TOTAL DEPTH OF BORING: 6.50 ft.		
DRILLER: EDDY MITCHELL		DEPTH TO GROUNDWATER: 6.0 ft.		
HAMMER WGT.: 140 lbs.	HAMMER DROP: 30 inches		SURFACE CONDITIONS: FILL	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1					GM	GRAVELLY FILL	10YR 5/8	DRY	LOOSE			
2						GRAVELLY SAND SILT	10YR 3/1 10YR 3/4	DRY MOIST	LOOSE LOOSE			
3						CLAYEY GRAVEL	7.5YR 4/4	MOIST	M. DENSE			
4					GC	CLAYEY GRAVEL	10YR 4/6	MOIST	DENSE			
5		X		B2-17-5b		CLAYEY GRAVEL	10YR 4/6	MOIST	DENSE			
6		X		B2-17-6.5b		CLAYEY GRAVEL W/LARGE COBBLES	10YR 4/6	WET	DENSE			GROUNDWATER @ 6.0'

# BORING LOG

PROJ. NAME: BLFP, WELL INSTALLATION		PROJECT NO.: 00142803.204	Sheet 1 of 1
METHOD OF DRILL: HOLLOW STEM AUGER		LOCATION: N OF DIP TANK BLDG	
SAMPLER: SPLIT SPOON	OD: 2.75" ID: 2.5"	LOGGED BY: CE	BORING #: MW-15
BORING DIAMETER: 8.0"		DATE STARTED: 05/17/06	TIME: 2:50 PM
DRILLING CO.: MITCHELL ENV. DRILLING CORP.		DATE COMPLETED: 05/17/06	TIME: 4:15 PM
C57 LIC. #: 672617		TOTAL DEPTH OF BORING: 20.0 ft.	
DRILLER: EDDY MITCHELL		DEPTH TO GROUNDWATER: 11.0 ft.	
HAMMER WGT.: 140 lbs.	HAMMER DROP: 30 inches	SURFACE CONDITIONS: CONCRETE	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1						1.5' CONCRETE						FLUSH MOUNTED TRAFFIC BOX W/ LOCKING WELL CAP
2						3" OF 5" GRAVELS	10YR 3/4					CEMENT GROUT 0.0'-1.0'
3					CL			MOIST	STIFF			
4					GC		2.5Y 4/3	DRY	LOOSE			2" BLANK PVC WELL CASING 0.0'-3.0'
5		X	26	MW-15-5		CLAY W/ 20% COARSE GRAVELS & 10% SAND	2.5Y 5/4	DAMP	V. STIFF			BENTONITE SEAL 1.0'-2.0'
6			28									
7			40		CL							
8												
9					GM	80% COARSE GRAVEL, COARSE SAND & FINES	5Y 4/2	DAMP	LOOSE			
10		X	14	MW-15-10		SANDY CLAY W/ 5% FINE GRAVEL, SLIGHT ODOR	10BG 5/1, 50% 5G 4/1	DAMP	V. STIFF			
11			19									
12			37		CL							GROUNDWATER @ 11.0' bgs
13						CLAY W/ 10% SILT, 10% FINE SAND	5Y 4/4	DAMP	V. STIFF			
14												
15		X	12	MW-15-15	CH	CLAY W/ 10% SILT, 10% FINE SAND	2.5Y 5/4	DAMP	V. STIFF			
16			14									
17			18			CLAYEY GRAVEL	5Y 4/2	WET	LOOSE			
18					GM							SAND 2.0'-20.0'
19		X	21			CLAYEY GRAVEL, FUEL ODOR	5 BG 4/1	WET	STIFF			
20		X	29									2" SLOT PVC WELL SCREEN 3.0'-20.0'
		X	40	MW-15-20	SM	COARSE SAND W/ FINES	2.5Y 5/6	WET	LOOSE			

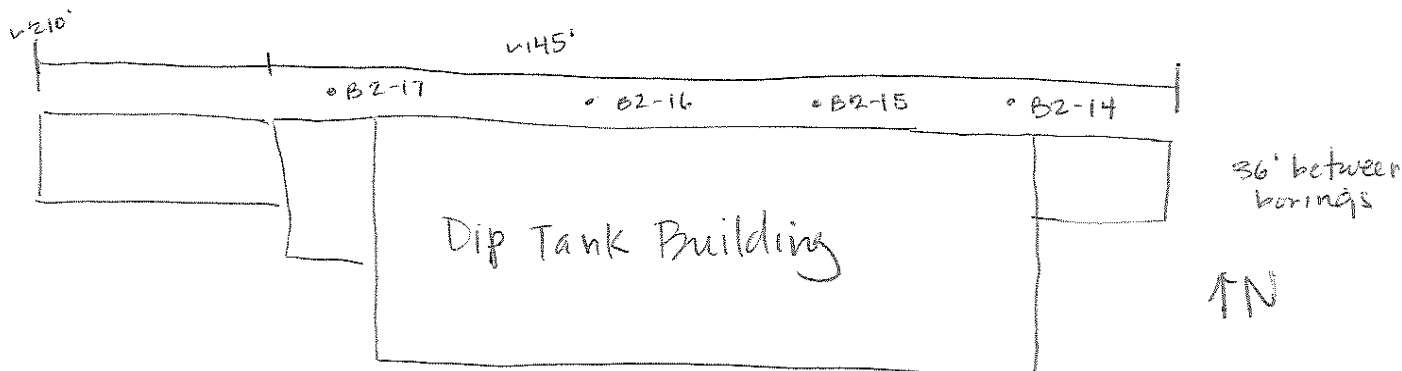
# BORING LOG

PROJ. NAME: BLFP, WELL INSTALLATION		PROJECT NO.: 00142803.204	Sheet 1 of 1
METHOD OF DRILL: HOLLOW STEM AUGER		LOCATION: S OF DIP TANK BLDG	
SAMPLER: SPLIT SPOON	OD: 2.75" ID: 2.0"	LOGGED BY: CE	BORING #: MW-16
BORING DIAMETER: 8.0"		DATE STARTED: 05/17/06	TIME: 10:45 AM
DRILLING CO.: MITCHELL ENV. DRILLING CORP.		DATE COMPLETED: 05/17/06	TIME: 1:56 PM
C57 LIC. #: 672617		TOTAL DEPTH OF BORING: 20.0 ft.	
DRILLER: EDDY MITCHELL		DEPTH TO GROUNDWATER: 10.5 ft.	
HAMMER WGT.: 140 lbs.	HAMMER DROP: 30 inches	SURFACE CONDITIONS: SOIL/FILL	

DEPTH	GRAPHIC SYMBOL	RECOVERY	BLOWS	SAMPLE NO.	USCS SYMBOL	SOIL DESCRIPTION	COLOR	MOISTURE	CONSISTENCY	PID (ppm)	WELL CONSTR.	WELL DESCRIPTION
1					GM	GRAVELLY FILL	10YR 5/8					FLUSH MOUNTED TRAFFIC BOX W/ LOCKING WELL CAP
2						GRAVEL, SAND, SILT	10YR 3/1					CEMENT GROUT 0.0'-1.0'
3						CLAYEY GRAVEL	10YR 3/4	MOIST	STIFF			2" BLANK PVC WELL CASING 0.0'-3.0'
4					GC	CLAYEY GRAVEL	7.5Y 4/4	DRY	LOOSE			BENTONITE SEAL 1.0'-2.0'
5		X		MW-16-5			10YR 4/6	MOIST	DENSE			
6												
7						CLAYEY GRAVEL W/ LARGE COBBLES	10YR 4/6	WET	DENSE			
8					GM	50% COARSE GRAVEL, 20% FINE GRAVEL, 20% FINES, 10% SAND	10YR 5/6	DRY	LOOSE			
9						75% COARSE GRAV., 5% SAND, 10% FINE GRAV., 10% FINES	10YR 5/6					
10		X	12	MW-16-10			10YR 5/6	WET	V. STIFF			GROUNDWATER @ 10.5' bgs
11			30		CL	GRAVELLY CLAY, 15% FINE GRAVEL, 40% CLAY, 20% SILT, 25% FINE SAND						
12			39									
13												
14					SP	5% FINE GRAVEL, 10% FINES	2.5Y 4/4	WET	V. SOFT			
15		X	29	MW-16-15			10YR 4/6	WET	V. STIFF			
16			50			FINE GRAVEL W/ CLAY & SAND						
17					GM	CLAYEY COARSE GRAVEL UP TO 3"		WET	STIFF			2.5-3.0 MONTEREY SAND 2.0'-20.0'
18						CLAYEY GRAVEL	2.5Y 5/8					
19			7									
20		X	26	MW-16-20								2" SLOT PVC WELL SCREEN 3.0'-20.0'
			21		CL	GRAVELLY CLAY, FINE GRAVEL	2.5Y 5/4	WET	V. STIFF			

By CE Date 1/25/06 Client BUEP Sheet No. \_\_\_\_\_ of \_\_\_\_\_  
Subject Boring Installation Job No. 00142803.114a

ARRIVED onSite  
paced/measured sample locations



opened well MW-14 for depth to GW 8.15' bgs from TOC  
decon equipment

started B2-14 10:30 am  
gravelly fill w/ 2" cobbles to 2.5' bgs

Sample  
B2-14-5 was collected from at 1.50  
groundwater encountered at 5'9" bgs

Sample  
B2-14-5.75 collected @ 2:30  
total depth of boring = 5.75'

deconed equipment  
start B2-15 @ 3:30

stopped B2-15 @ 5:30  
cleaned site - backed truck  
left site @ 5:50.

By CC Date 4/26/06 Client BLFP Sheet No. 2 of 2  
Subject BLFP - boring Installation Job No. 00142803.1140

prepared to collect water samples from B2-14 & B2-15  
samples are v. turbid - Not enough water to purge clean.

collected <sup>groundwater</sup> sample B2-14 @ 4:00  
labeled & put samples in ~~ice chest~~ cooler.

collected gw sample B2-15 @ 5:10

labeled & put samples in cooler.

cleaned site & packed truck of sampling tools.

Returned to office & unloaded ~~truck~~ supplies from truck.

4/27/06

8:00 dropped samples off at NCL.





By CE Date 4/26/06 Client BLFP Sheet No. 1 of 2  
Subject BLFP - boring installation Job No. 00142803.11400

arrived onsite 8:30

cont. B2-15

@ 5' bgs got ~~ref~~ refusal

3" cobble in bottom of boring. could not get  
out or around it.

9:00

stepped out (to the east) 2'  
start B2-15

sample

B2-15-5 collected @ 10:15

gw encountered @ 5' 8" bgs

finished hand augering B2-15 @ 10:30  
total depth = ~~5'~~ 5' 10"

decon equipment Paul Jones onsite (11)

Started B2-16 @ 10:40

began boring w/ post hole diggers

sample

B2-16-5 collected @ 11:51

Refusal @ 5' 6" - stopped digging large cobble layer

decon equipment

Started ~~B2~~ B2-17 @ 12:40

began boring w/ post hole diggers

sample

B2-17-5 collected @ 1:25

Refusal @ 5' 4" - stopped boring large cobble layer

decon equipment for packing



By CE Date 5/15/06 Client BLFP

Sheet No. 1 of     

Subject Boring installation

Job No. 03142803.11400

11:50 Arrived onsite Prep to install borings

12:20 call to Mitchell - left message

1:30 Decided to leave site - left another message

4:00 arrived onsite after talking to Eddy.

4:30 Driller arrived onsite.

checks boring location/access and discuss wells.

Eddy back drill rig behind building.

4:45 Begins to drill.

5:01 Sample B2-17-5b is collected.

5-5 1/2 - then hits rock.

5:07 B2-17-6.5b is collected.

groundwater encountered

5:20 B2-17 collected - groundwater sample.

Driller puts bentonite pellets down hole ~~4 1/2~~ 2' above groundwater - then fills hole w/ drill cuttings.

5:45 Sample B2-16-5b collected

5:59 Sample B2-16-6.5b

6:05 Groundwater Sample B2-16

Driller puts bentonite down boring then fills boring w/ drill cuttings

6:20 Driller leaves site

6:35 I leave site after cleanup & labeling.

Did NOT Describe samples bc I described them in field notes.



By CC Date 5/17/06 Client BLFP

Sheet No. 2 of 2

Subject well installation

Job No. 00142803 11420

Seq. - finished cutting concrete. 1.5'

2:50 Started MW-15

MW-15-5 @ 3:06

MW-15-10 @ 3:14

MW-15-15 @ 3:20

MW-15-20 @ 3:30

5 1/2 bags of sand.

1.5' bentonite

Rinsate Drum sample - @ 4:30

Driller left site 5:15

1 left site 5:50

By Ch Date 5/17/06 Client BLFP

Sheet No. 1 of 2

Subject well installation

Job No. 00142803-11400

Phone call NCL

Muddy from NCL gas  
B2-6-56 ND  
B2-7-56 ND  
B2-16-56 ND

Started MW-16 @ 10:45

Samples

4.5" - 5.5"

left split spoon sampler in  
Next will be  
9.5" - 11"

Sample MW-16-5 - 11:10

Sample MW-16-10  
GW.

11:20

Groundwater @ 10.5'

9.5" - 11"

wet at bottom of ~~split~~  
sample  
Dry at top

Sample MW-16-15

11:29

29 5" > split spoon sampler  
5 5"

Sample MW-16-20

11:40

17' screened 3' not screened  
Monterey sand

2 1/2 4 1/2 bags  
#3

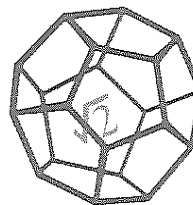
1' of Bentonite

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## **Appendix F**

### **Laboratory Reports and Chain-of-Custody**

RECEIVED  
MAY 15 2006



NORTH COAST  
LABORATORIES LTD.

May 11, 2006

WK-EUREKA

Winzler and Kelly  
633 Third Street  
Eureka, CA 95501

Attn: Colleen Ellis

RE: 0014280311400

Order No.: 0604526

Invoice No.: 58059

PO No.:

ELAP No. 1247-Expires July 2006

**SAMPLE IDENTIFICATION**

Fraction      Client Sample Description

01A	B2-14
01C	B2-14
02A	B2-15
02C	B2-15
03A	B2-14-5
03B	B2-14-5
04A	B2-14-5.75
04B	B2-14-5.75
05A	B2-15-5
05B	B2-15-5
06A	B2-16-5
06B	B2-16-5
07A	B2-17-5
07B	B2-17-5

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

**REPORT CERTIFIED BY**

*Colleen Blackston*

Laboratory Supervisor(s)

*[Signature]*

QA Unit

*[Signature]*

Jesse G. Chaney, Jr.  
Laboratory Director

**CLIENT:** Winzler and Kelly  
**Project:** 0014280311400  
**Lab Order:** 0604526

**CASE NARRATIVE**

All samples submitted for a silica gel cleanup were initially analyzed for diesel/motor oil. The samples showing no detectable levels of the analytes were not subjected to the cleanup procedure.

TPH as Diesel/Motor Oil w/ Silica Gel Cleanup:

The relative percent difference (RPD) for the laboratory control samples was above the acceptance limit for diesel. This indicates that the results could be variable. Since there were no detectable levels of analyte in the samples, the data were accepted.



Date: 11-May-06  
WorkOrder: 0604526

## ANALYTICAL REPORT

Client Sample ID: B2-14  
Lab ID: 0604526-01A

Received: 4/27/06

Collected: 4/26/06 16:00

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	3.0	µg/L	1.0		5/3/06
Benzene	ND	0.50	µg/L	1.0		5/3/06
Toluene	ND	0.50	µg/L	1.0		5/3/06
Ethylbenzene	ND	0.50	µg/L	1.0		5/3/06
m,p-Xylene	ND	0.50	µg/L	1.0		5/3/06
o-Xylene	ND	0.50	µg/L	1.0		5/3/06
Surrogate: Cis-1,2-Dichloroethylene	91.2	85-115	% Rec	1.0		5/3/06

Test Name: TPH as Gasoline

Reference: EPA 5030/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		5/3/06

Client Sample ID: B2-14  
Lab ID: 0604526-01C

Received: 4/27/06

Collected: 4/26/06 16:00

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	5/5/06	5/5/06
TPHC Motor Oil	ND	170	µg/L	1.0	5/5/06	5/5/06

Client Sample ID: B2-15  
Lab ID: 0604526-02A

Received: 4/27/06

Collected: 4/26/06 17:10

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	3.0	µg/L	1.0		5/3/06
Benzene	ND	0.50	µg/L	1.0		5/3/06
Toluene	ND	0.50	µg/L	1.0		5/3/06
Ethylbenzene	ND	0.50	µg/L	1.0		5/3/06
m,p-Xylene	ND	0.50	µg/L	1.0		5/3/06
o-Xylene	ND	0.50	µg/L	1.0		5/3/06
Surrogate: Cis-1,2-Dichloroethylene	90.6	85-115	% Rec	1.0		5/3/06

Test Name: TPH as Gasoline

Reference: EPA 5030/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		5/3/06





Date: 11-May-06

WorkOrder: 0604526

## ANALYTICAL REPORT

Client Sample ID: B2-15

Received: 4/27/06

Collected: 4/26/06 17:10

Lab ID: 0604526-02C

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	5/5/06	5/5/06
TPHC Motor Oil	ND	170	µg/L	1.0	5/5/06	5/5/06

Client Sample ID: B2-14-5

Received: 4/27/06

Collected: 4/25/06 13:50

Lab ID: 0604526-03A

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/3/06	5/3/06
Benzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Toluene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
o-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Surrogate: Cis-1,2-Dichloroethylene	96.2	71.8-135	% Rec	1.0	5/3/06	5/3/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/3/06	5/3/06

Client Sample ID: B2-14-5

Received: 4/27/06

Collected: 4/25/06 13:50

Lab ID: 0604526-03B

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3550/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/4/06	5/10/06
TPHC Motor Oil	10	10	µg/g	1.0	5/4/06	5/10/06

Date: 11-May-06  
WorkOrder: 0604526

## ANALYTICAL REPORT

Client Sample ID: B2-14-5.75  
Lab ID: 0604526-04A

Received: 4/27/06

Collected: 4/25/06 14:30

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/3/06	5/3/06
Benzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Toluene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
o-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Surrogate: Cis-1,2-Dichloroethylene	97.1	71.8-135	% Rec	1.0	5/3/06	5/3/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/3/06	5/3/06

Client Sample ID: B2-14-5.75  
Lab ID: 0604526-04B

Received: 4/27/06

Collected: 4/25/06 14:30

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3550/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/4/06	5/10/06
TPHC Motor Oil	13	10	µg/g	1.0	5/4/06	5/10/06

Client Sample ID: B2-15-5  
Lab ID: 0604526-05A

Received: 4/27/06

Collected: 4/26/06 10:15

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/3/06	5/3/06
Benzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Toluene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
o-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Surrogate: Cis-1,2-Dichloroethylene	98.0	71.8-135	% Rec	1.0	5/3/06	5/3/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/3/06	5/3/06

Date: 11-May-06  
WorkOrder: 0604526

## ANALYTICAL REPORT

Client Sample ID: B2-15-5  
Lab ID: 0604526-05B

Received: 4/27/06

Collected: 4/26/06 10:15

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/2/06	5/3/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/2/06	5/3/06

Client Sample ID: B2-16-5  
Lab ID: 0604526-06A

Received: 4/27/06

Collected: 4/26/06 11:51

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/3/06	5/3/06
Benzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Toluene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
o-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Surrogate: Cis-1,2-Dichloroethylene	97.2	71.8-135	% Rec	1.0	5/3/06	5/3/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/3/06	5/3/06

Client Sample ID: B2-16-5  
Lab ID: 0604526-06B

Received: 4/27/06

Collected: 4/26/06 11:51

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/2/06	5/3/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/2/06	5/3/06

Date: 11-May-06  
WorkOrder: 0604526

## ANALYTICAL REPORT

Client Sample ID: B2-17-5  
Lab ID: 0604526-07A

Received: 4/27/06

Collected: 4/26/06 13:25

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/3/06	5/3/06
Benzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Toluene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
o-Xylene	ND	0.0050	µg/g	1.0	5/3/06	5/3/06
Surrogate: Cis-1,2-Dichloroethylene	96.8	71.8-135	% Rec	1.0	5/3/06	5/3/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/3/06	5/3/06

Client Sample ID: B2-17-5  
Lab ID: 0604526-07B

Received: 4/27/06

Collected: 4/26/06 13:25

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/2/06	5/3/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/2/06	5/3/06



CLIENT: Winzler and Kelly

Work Order: 0604526

Project: 0014280311400

## QC SUMMARY REPORT

Laboratory Control Spike

Sample ID	LCS-15639	Batch ID: 15639	Test Code: BTXES	Units: µg/g	Analysis Date 5/3/06 4:21:07 PM	Prep Date 5/3/06					
Client ID:		Run ID: ORGC8_060503B			SeqNo: 590639						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	0.4051	0.050	0.400	0	101%	75	124	0			
Benzene	0.05172	0.0050	0.0500	0	103%	80	128	0			
Toluene	0.05304	0.0050	0.0500	0	106%	85	126	0			
Ethylbenzene	0.05209	0.0050	0.0500	0	104%	80	126	0			
m,p-Xylene	0.09863	0.0050	0.100	0	98.6%	84	130	0			
o-Xylene	0.04980	0.0050	0.0500	0	99.6%	84	125	0			
Cis-1,2-Dichloroethylene	1.13	0.10	1.00	0	113%	72	135	0			
Sample ID	LCSD-15639	Batch ID: 15639	Test Code: BTXES	Units: µg/g	Analysis Date 5/3/06 4:56:40 PM	Prep Date 5/3/06					
Client ID:		Run ID: ORGC8_060503B			SeqNo: 590640						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	0.3956	0.050	0.400	0	98.9%	75	124	0.405	2.37%	15	
Benzene	0.05123	0.0050	0.0500	0	102%	80	128	0.0517	0.939%	15	
Toluene	0.05248	0.0050	0.0500	0	105%	85	126	0.0530	1.05%	15	
Ethylbenzene	0.05232	0.0050	0.0500	0	105%	80	126	0.0521	0.442%	15	
m,p-Xylene	0.09826	0.0050	0.100	0	98.3%	84	130	0.0986	0.371%	15	
o-Xylene	0.05029	0.0050	0.0500	0	101%	84	125	0.0498	0.979%	15	
Cis-1,2-Dichloroethylene	1.12	0.10	1.00	0	112%	72	135	1.13	1.25%	15	

Qualifiers: ND - Not Detected at the Reporting Limit

J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits

R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** Winzler and Kelly  
**Work Order:** 0604526  
**Project:** 0014280311400

## QC SUMMARY REPORT

Method Blank

Sample ID	MB-15639	Batch ID: 15639	Test Code: TPHCGS	Units: µg/g	Analysis Date 5/3/06 8:28:05 PM	Prep Date 5/3/06
Client ID:		Run ID:	ORGC8_060503A	SeqNo: 590574		
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Gas (C6-C14)	ND	1.0				
Sample ID	MB-5/2/06	Batch ID: R41083	Test Code: TPHCGW	Units: µg/L	Analysis Date 5/2/06 8:59:08 PM	Prep Date
Client ID:		Run ID:	ORGC8_060501B	SeqNo: 590000		
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Gas (C6-C14)	ND	50				
Sample ID	MB-15626	Batch ID: 15626	Test Code: TPHDMS	Units: µg/g	Analysis Date 5/3/06 12:31:14 AM	Prep Date 5/2/06
Client ID:		Run ID:	ORGC7_060502A	SeqNo: 590025		
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Diesel (C12-C22)	0.5726	1.0				
TPHC Motor Oil	ND	10				J
Sample ID	MB-15649	Batch ID: 15649	Test Code: TPHDMW	Units: µg/L	Analysis Date 5/5/06 8:39:47 PM	Prep Date 5/5/06
Client ID:		Run ID:	ORGC7_060505B	SeqNo: 590854		
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Diesel (C12-C22)	ND	50				
TPHC Motor Oil	54.94	170				J

**Qualifiers:** ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

CLIENT: Winzler and Kelly  
Work Order: 0604526  
Project: 0014280311400

QC SUMMARY REPORT  
Laboratory Control Spike

Sample ID LCS-06263 Batch ID: R41084 Test Code: BTXEW Units: µg/L Analysis Date 5/2/06 4:52:24 PM Prep Date  
Client ID: Run ID: ORGC8\_060501C SeqNo: 590009

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	42.85	3.0	40.0	0	107%	85	115	0			
Benzene	4.968	0.50	5.00	0	99.4%	85	115	0			
Toluene	5.003	0.50	5.00	0	100%	85	115	0			
Ethylbenzene	5.002	0.50	5.00	0	100%	85	115	0			
m,p-Xylene	10.00	0.50	10.0	0	100%	85	115	0			
o-Xylene	4.918	0.50	5.00	0	98.4%	85	115	0			
Cis-1,2-Dichloroethylene	1.12	0.10	1.00	0	112%	85	115	0			

Sample ID LCSD-06263 Batch ID: R41084 Test Code: BTXEW Units: µg/L Analysis Date 5/2/06 5:27:59 PM Prep Date  
Client ID: Run ID: ORGC8\_060501C SeqNo: 590010

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	42.77	3.0	40.0	0	107%	85	115	42.8	0.189%	15	
Benzene	5.010	0.50	5.00	0	100%	85	115	4.97	0.840%	15	
Toluene	5.019	0.50	5.00	0	100%	85	115	5.00	0.331%	15	
Ethylbenzene	5.056	0.50	5.00	0	101%	85	115	5.00	1.06%	15	
m,p-Xylene	10.16	0.50	10.0	0	102%	85	115	10.0	1.58%	15	
o-Xylene	5.084	0.50	5.00	0	102%	85	115	4.92	3.32%	15	
Cis-1,2-Dichloroethylene	1.14	0.10	1.00	0	114%	85	115	1.12	1.77%	15	

Sample ID LCS-15643 Batch ID: 15643 Test Code: SGTDPMS Units: µg/g Analysis Date 5/10/06 6:24:35 PM Prep Date 5/4/06  
Client ID: Run ID: ORGC5\_060510B SeqNo: 591621

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	4.507	1.0	10.0	0	45.1%	29	111	0			
TPHC Motor Oil	10.15	10	20.0	0	50.8%	46	114	0			

Qualifiers: ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits

**CLIENT:** Winzler and Kelly  
**Work Order:** 0604526  
**Project:** 0014280311400

**QC SUMMARY REPORT**  
Laboratory Control Spike Duplicate

Sample ID	LCSD-15643	Batch ID: 15643	Test Code: SGTPDMS	Units: µg/g	Analysis Date 5/10/06 6:47:33 PM	Prep Date 5/4/06	
Client ID:			Run ID: ORGC5_060510B		SeqNo: 591622		
Analyte			Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Diesel (C12-C22)			5.458	1.0	10.0	0	54.6% 29 111 4.51 19.1% 15 R
TPHC Motor Oil			11.28	10	20.0	0	56.4% 46 114 10.2 10.5% 15
Sample ID	LCS-15639-G	Batch ID: 15639	Test Code: TPHCGS	Units: µg/g	Analysis Date 5/3/06 6:07:28 PM	Prep Date 5/3/06	
Client ID:			Run ID: ORGC8_060503A		SeqNo: 590572		
Analyte			Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Gas (C6-C14)			10.46	1.0	10.0	0	105% 102 128 10.5 0
Sample ID	LCSD-15639-G	Batch ID: 15639	Test Code: TPHCGS	Units: µg/g	Analysis Date 5/3/06 6:42:50 PM	Prep Date 5/3/06	
Client ID:			Run ID: ORGC8_060503A		SeqNo: 590573		
Analyte			Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Gas (C6-C14)			10.52	1.0	10.0	0	105% 102 128 10.5 0.599% 15
Sample ID	LCS-06264	Batch ID: R41083	Test Code: TPHCGW	Units: µg/L	Analysis Date 5/2/06 6:38:56 PM	Prep Date	
Client ID:			Run ID: ORGC8_060501B		SeqNo: 589997		
Analyte			Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Gas (C6-C14)			460.2	50	500	0	92.0% 85 115 0
Sample ID	LCSD-06264	Batch ID: R41083	Test Code: TPHCGW	Units: µg/L	Analysis Date 5/2/06 7:14:11 PM	Prep Date	
Client ID:			Run ID: ORGC8_060501B		SeqNo: 589998		
Analyte			Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual
TPHC Gas (C6-C14)			463.1	50	500	0	92.6% 85 115 460 0.623% 15

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank



**CLIENT:** Winzler and Kelly  
**Work Order:** 0604526  
**Project:** 0014280311400

**QC SUMMARY REPORT**  
Laboratory Control Spike

Sample ID	LCS-15626	Batch ID: 15626	Test Code: TPHDMS	Units: µg/g	Analysis Date 5/2/06 10:29:17 PM	Prep Date 5/2/06	
Client ID:		Run ID: ORGC7_060502A			SeqNo: 590022		
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual	
TPHC Diesel (C12-C22)		8.954	1.0	10.0	0	89.5% 70 130 0	
TPHC Motor Oil		20.66	10	20.0	0	103% 70 130 0	
Sample ID	LCSD-15626	Batch ID: 15626	Test Code: TPHDMS	Units: µg/g	Analysis Date 5/2/06 10:49:44 PM	Prep Date 5/2/06	
Client ID:		Run ID: ORGC7_060502A			SeqNo: 590023		
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual	
TPHC Diesel (C12-C22)		8.915	1.0	10.0	0	89.1% 70 130 8.95	0.445% 15
TPHC Motor Oil		20.60	10	20.0	0	103% 70 130 20.7	0.307% 15
Sample ID	LCS-15649	Batch ID: 15649	Test Code: TPHDMW	Units: µg/L	Analysis Date 5/5/06 5:35:43 PM	Prep Date 5/5/06	
Client ID:		Run ID: ORGC7_060505B			SeqNo: 590848		
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual	
TPHC Diesel (C12-C22)		409.3	50	500	0	81.9% 72 124 0	
TPHC Motor Oil		939.7	170	1,000	0	94.0% 71 139 0	
Sample ID	LCSD-15649	Batch ID: 15649	Test Code: TPHDMW	Units: µg/L	Analysis Date 5/5/06 5:56:07 PM	Prep Date 5/5/06	
Client ID:		Run ID: ORGC7_060505B			SeqNo: 590849		
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual	
TPHC Diesel (C12-C22)		360.3	50	500	0	72.1% 72 124 409	12.7% 15
TPHC Motor Oil		951.2	170	1,000	0	95.1% 71 139 940	1.21% 15

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

# North Coast Laboratories, Ltd.

Date: 11-May-06

**CLIENT:** Winzler and Kelly  
**Work Order:** 0604526  
**Project:** 0014280311400

## QC SUMMARY REPORT

Method Blank

Sample ID **MB-15639** Batch ID: **15639** Test Code: **BTXES** Units: **µg/g** Analysis Date **5/3/06 8:28:05 PM** Prep Date **5/3/06**  
 Client ID: Run ID: **ORGC8\_060503B** SeqNo: **590642**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	0.050									
Benzene	ND	0.0050									
Toluene	ND	0.0050									
Ethylbenzene	ND	0.0050									
m,p-Xylene	ND	0.0050									
o-Xylene	ND	0.0050									
Cis-1,2-Dichloroethylene	0.952	0.10	1.00	0	95.2%	72	135	0			

Sample ID **MB-512/06** Batch ID: **R41084** Test Code: **BTXEW** Units: **µg/L** Analysis Date **5/2/06 8:59:08 PM** Prep Date  
 Client ID: Run ID: **ORGC8\_060501C** SeqNo: **590012**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	3.0									
Benzene	0.07913	0.50									J
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	0.50									
o-Xylene	ND	0.50									
Cis-1,2-Dichloroethylene	0.878	0.10	1.00	0	87.8%	85	115	0			

Sample ID **MB-15643** Batch ID: **15643** Test Code: **SGTPDMS** Units: **µg/g** Analysis Date **5/10/06 8:20:20 PM** Prep Date **5/4/06**  
 Client ID: Run ID: **ORGC5\_060510B** SeqNo: **591623**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	0.8706	1.0									J
TPHC Motor Oil	ND	10									

**Qualifiers:** ND - Not Detected at the Reporting Limit S - Spike Recovery outside accepted recovery limits B - Analyte detected in the associated Method Blank  
 J - Analyte detected below quantitation limits R - RPD outside accepted recovery limits



# Chain of Custody

of

5680 West End Road • Arcata • CA 95521-9202

LABORATORY NUMBER:

510

Results & Invoice to: Wingard & Keung

[illegible]

43-8326

**Copies of Report to:**

Sampler (Sign & Print): Deer Lane

## PROJECT INFORMATION

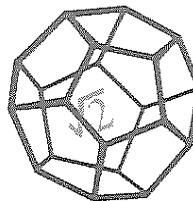
**Project Name:**

**Purchase Order Number:**

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
Allen Ellis	4/21/06	Paul C. J.	4/27/06
	7:22		

\*MATRIX: DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

**ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT**



**NORTH COAST  
LABORATORIES LTD.**

**RECEIVED**  
MAY 26 2006

May 26, 2006

Winzler and Kelly  
633 Third Street  
Eureka, CA 95501

WK - EUREKA

Order No.: 0605363

Invoice No.: 58398

PO No.:

ELAP No. 1247-Expires July 2006

Attn: Colleen Ellis

RE: 00H2803.11400 BLFP

**SAMPLE IDENTIFICATION**

Fraction Client Sample Description

01A	B2-17-5b
01B	B2-17-5b
02A	B2-17-6.5b
03A	B2-16-5b
03B	B2-16-5b
04A	B2-16-6.5b
04B	B2-16-6.5b
05A	B2-17
05D	B2-17
06A	B2-16
06D	B2-16
07A	Travel Blank

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

**REPORT CERTIFIED BY**

*Colleen Blackstone*

Laboratory Supervisor(s)

*[Signature]*

QA Unit

*[Signature]*

Jesse G. Chaney, Jr.  
Laboratory Director

**CLIENT:** Winzler and Kelly  
**Project:** 00H2803.11400 BLFP  
**Lab Order:** 0605363

**CASE NARRATIVE**

All samples submitted for a silica gel cleanup were initially analyzed for diesel/motor oil. The samples showing no detectable levels of the analytes were not subjected to the cleanup procedure.

TPH as Diesel/Motor Oil w/ Silica Gel Cleanup - Soil:

Due to a contaminate present in the method blank and sample B2-17-5b, the reporting limit for this sample was raised.

The relative percent difference (RPD) for the laboratory control samples was above the acceptance limit for diesel. This indicates that the results could be variable. Since there were no detectable levels of analyte in the samples, the data were accepted.

BTEX:

The reporting limit for MTBE was raised for sample B2-17 due to matrix interference.

TPH as Diesel/Motor Oil - Soil:

The relative percent difference (RPD) for the laboratory control samples was above the acceptance limit for diesel. This indicates that the results could be variable. Since there were no detectable levels of analyte in the sample, the data were accepted.

TPH as Diesel/Motor Oil - Water:

The relative percent difference (RPD) for the laboratory control samples was above the acceptance limit for motor oil. This indicates that the results could be variable. Since there were no detectable levels of analyte in the sample, the data were accepted.

Date: 26-May-06  
WorkOrder: 0605363

## ANALYTICAL REPORT

Client Sample ID: B2-17-5b  
Lab ID: 0605363-01A

Received: 5/16/06

Collected: 5/15/06 17:01

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3550/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.5	µg/g	1.0	5/19/06	5/24/06
TPHC Motor Oil	54	10	µg/g	1.0	5/19/06	5/24/06

Client Sample ID: B2-17-5b  
Lab ID: 0605363-01B

Received: 5/16/06

Collected: 5/15/06 17:01

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/16/06	5/17/06
Benzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Toluene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
o-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Surrogate: Cis-1,2-Dichloroethylene	98.1	71.8-135	% Rec	1.0	5/16/06	5/17/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/16/06	5/17/06

Client Sample ID: B2-17-6.5b  
Lab ID: 0605363-02A

Received: 5/16/06

Collected: 5/15/06 17:07

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/16/06	5/17/06
Benzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Toluene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
o-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Surrogate: Cis-1,2-Dichloroethylene	97.4	71.8-135	% Rec	1.0	5/16/06	5/17/06

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3550/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/19/06	5/24/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/19/06	5/24/06

Date: 26-May-06

WorkOrder: 0605363

Test Name: TPH as Gasoline

## ANALYTICAL REPORT

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/16/06	5/17/06

Client Sample ID: B2-16-5b

Received: 5/16/06

Collected: 5/15/06 17:45

Lab ID: 0605363-03A

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/17/06	5/18/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/17/06	5/18/06

Client Sample ID: B2-16-5b

Received: 5/16/06

Collected: 5/15/06 17:45

Lab ID: 0605363-03B

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/16/06	5/17/06
Benzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Toluene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
o-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Surrogate: Cis-1,2-Dichloroethylene	98.5	71.8-135	% Rec	1.0	5/16/06	5/17/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/16/06	5/17/06

Client Sample ID: B2-16-6.5b

Received: 5/16/06

Collected: 5/15/06 17:59

Lab ID: 0605363-04A

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3550/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/19/06	5/24/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/19/06	5/24/06

Date: 26-May-06  
WorkOrder: 0605363

## ANALYTICAL REPORT

Client Sample ID: B2-16-6.5b  
Lab ID: 0605363-04B

Received: 5/16/06

Collected: 5/15/06 17:59

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/16/06	5/17/06
Benzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Toluene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
o-Xylene	ND	0.0050	µg/g	1.0	5/16/06	5/17/06
Surrogate: Cis-1,2-Dichloroethylene	102	71.8-135	% Rec	1.0	5/16/06	5/17/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/16/06	5/17/06

Client Sample ID: B2-17

Received: 5/16/06

Collected: 5/15/06 17:20

Lab ID: 0605363-05A

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	6.0	µg/L	1.0		5/17/06
Benzene	ND	0.50	µg/L	1.0		5/17/06
Toluene	ND	0.50	µg/L	1.0		5/17/06
Ethylbenzene	ND	0.50	µg/L	1.0		5/17/06
m,p-Xylene	ND	0.50	µg/L	1.0		5/17/06
o-Xylene	ND	0.50	µg/L	1.0		5/17/06
Surrogate: Cis-1,2-Dichloroethylene	96.5	85-115	% Rec	1.0		5/17/06

Test Name: TPH as Gasoline

Reference: EPA 5030/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		5/17/06

Client Sample ID: B2-17

Received: 5/16/06

Collected: 5/15/06 17:20

Lab ID: 0605363-05D

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	5/16/06	5/16/06
TPHC Motor Oil	ND	170	µg/L	1.0	5/16/06	5/16/06



Date: 26-May-06  
WorkOrder: 0605363

## ANALYTICAL REPORT

Client Sample ID: B2-16  
Lab ID: 0605363-06A

Received: 5/16/06

Collected: 5/15/06 18:05

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	3.0	µg/L	1.0		5/17/06
Benzene	ND	0.50	µg/L	1.0		5/17/06
Toluene	0.56	0.50	µg/L	1.0		5/17/06
Ethylbenzene	ND	0.50	µg/L	1.0		5/17/06
m,p-Xylene	ND	0.50	µg/L	1.0		5/17/06
o-Xylene	ND	0.50	µg/L	1.0		5/17/06
Surrogate: Cis-1,2-Dichloroethylene	100	85-115	% Rec	1.0		5/17/06

Test Name: TPH as Gasoline

Reference: EPA 5030/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		5/17/06

Client Sample ID: B2-16

Received: 5/16/06

Collected: 5/15/06 18:05

Lab ID: 0605363-06D

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3510/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	50	µg/L	1.0	5/19/06	5/22/06
TPHC Motor Oil	ND	170	µg/L	1.0	5/19/06	5/22/06

Client Sample ID: Travel Blank

Received: 5/16/06

Collected: 5/15/06 0:00

Lab ID: 0605363-07A

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	3.0	µg/L	1.0		5/16/06
Benzene	ND	0.50	µg/L	1.0		5/16/06
Toluene	ND	0.50	µg/L	1.0		5/16/06
Ethylbenzene	ND	0.50	µg/L	1.0		5/16/06
m,p-Xylene	ND	0.50	µg/L	1.0		5/16/06
o-Xylene	ND	0.50	µg/L	1.0		5/16/06
Surrogate: Cis-1,2-Dichloroethylene	89.0	85-115	% Rec	1.0		5/16/06

# North Coast Laboratories, Ltd.

Date: 26-May-06

CLIENT: Winzler and Kelly

Work Order: 0605363

Project: 00H2803.11400 BLFP

## QC SUMMARY REPORT

Method Blank

Sample ID	MB-15713	Batch ID: 15713	Test Code: BTXES	Units: µg/g	Analysis Date	5/17/06 4:24:14 AM	Prep Date	5/16/06			
Client ID:			Run ID: ORGC8_060516E		SeqNo:	592867					
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	0.050									
Benzene	ND	0.0050									
Toluene	0.004562	0.0050									
Ethylbenzene	ND	0.0050									
m,p-Xylene	ND	0.0050									
o-Xylene	ND	0.0050									
Cis-1,2-Dichloroethylene	0.983	0.10	1.00	0	98.3%	72	135	0			

Sample ID	MB-5/16/06	Batch ID: R41305	Test Code: BTXEW	Units: µg/L	Analysis Date	5/16/06 10:34:17 PM	Prep Date				
Client ID:			Run ID: ORGC8_060516C		SeqNo:	592757					
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	3.0									J
Benzene	0.07938	0.50									J
Toluene	0.2270	0.50									J
Ethylbenzene	ND	0.50									
m,p-Xylene	0.2095	0.50									J
o-Xylene	ND	0.50									
Cis-1,2-Dichloroethylene	0.956	0.10	1.00	0	95.6%	85	115	0			

Sample ID	MB-15750	Batch ID: 15750	Test Code: SGTPDMS	Units: µg/g	Analysis Date	5/24/06 3:31:42 PM	Prep Date	5/19/06			
Client ID:			Run ID: ORGC5_060524A		SeqNo: 595104						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	1.009	1.0									
TPHC Motor Oil	ND	10									

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** Winzler and Kelly  
**Work Order:** 0605363  
**Project:** 00H2803.11400 BLFP

# QC SUMMARY REPORT Method Blank

Sample ID	MB-15749	Batch ID:	15749	Test Code:	SGTPDMW	Units:	µg/L	Analysis Date	5/22/06 12:39:12 PM	Prep Date	5/19/06
Client ID:		Run ID:	ORG05_060522A	SeqNo:	594556						
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Diesel (C12-C22)		47.65		50							J
TPHC Motor Oil		64.97		170							J

Sample ID	MB-15713	Batch ID:	15713	Test Code:	TPHCGS	Units:	µg/g	Analysis Date	5/17/06 4:24:14 AM	Prep Date	5/16/06
Client ID:		Run ID:	ORG08_060516D	SeqNo:	592806						
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Gas (C6-C14)		0.4148		1.0							J

Sample ID	MB-5/16/06	Batch ID:	R41303	Test Code:	TPHCGW	Units:	µg/L	Analysis Date	5/16/06 10:34:17 PM	Prep Date	
Client ID:		Run ID:	ORG08_060516A	SeqNo:	592750						
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Gas (C6-C14)		ND		50							

Sample ID	MB-15727	Batch ID:	15727	Test Code:	TPHDM5	Units:	µg/g	Analysis Date	5/18/06 7:52:56 PM	Prep Date	5/17/06
Client ID:		Run ID:	ORG07_060518B	SeqNo:	593976						
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Diesel (C12-C22)		0.7577		1.0							J
TPHC Motor Oil		ND		10							

Sample ID	MB-15711	Batch ID:	15711	Test Code:	TPHDMW	Units:	µg/L	Analysis Date	5/16/06 5:19:03 PM	Prep Date	5/16/06
Client ID:		Run ID:	ORG07_060516A	SeqNo:	592721						
Analyte		Result		Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD RPDLimit Qual
TPHC Diesel (C12-C22)		ND		50							
TPHC Motor Oil		ND		170							

**Qualifiers:** ND - Not Detected at the Reporting Limit  
 J - Analyte detected below quantitation limits  
 S - Spike Recovery outside accepted recovery limits  
 R - RPD outside accepted recovery limits  
 B - Analyte detected in the associated Method Blank

# North Coast Laboratories, Ltd.

Date: 26-May-06

CLIENT: Winzler and Kelly

Work Order: 0605363

Project: 00H2803.11400 BLFP

## QC SUMMARY REPORT

Laboratory Control Spike

Sample ID	LCS-15713	Batch ID:	15713	Test Code: BTXES		Units:	µg/g	Analysis Date 5/17/06 1:29:32 AM		Prep Date 5/16/06			
Client ID:		Run ID:	ORGC8_060516E	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Analyte		Result											
MTBE		0.4007		0.050	0.400	0	100%	75	124	0			
Benzene		0.05120		0.0050	0.0500	0	102%	80	128	0			
Toluene		0.05408		0.0050	0.0500	0	108%	85	126	0			
Ethylbenzene		0.05340		0.0050	0.0500	0	107%	80	126	0			
m,p-Xylene		0.1012		0.0050	0.100	0	101%	84	130	0			
o-Xylene		0.05173		0.0050	0.0500	0	103%	84	125	0			
Cis-1,2-Dichloroethylene		1.07		0.10	1.00	0	107%	72	135	0			

Sample ID	LCSD-15713	Batch ID:	15713	Test Code:	BTXES	Units:	µg/g	Analysis Date	5/17/06 2:04:30 AM	Prep Date	5/16/06		
Client ID:		Run ID:	ORGC8_060516E	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Analyte		Result											
MTBE		0.4012		0.050	0.400	0	100%	75	124	0.401	0.121%	15	
Benzene		0.05119		0.0050	0.0500	0	102%	80	128	0.0512	0.00996%	15	
Toluene		0.05387		0.0050	0.0500	0	108%	85	126	0.0541	0.378%	15	
Ethylbenzene		0.05353		0.0050	0.0500	0	107%	80	126	0.0534	0.231%	15	
m,p-Xylene		0.1009		0.0050	0.100	0	101%	84	130	0.101	0.334%	15	
o-Xylene		0.05152		0.0050	0.0500	0	103%	84	125	0.0517	0.405%	15	
Cis-1,2-Dichloroethylene		1.07		0.10	1.00	0	107%	72	135	1.07	0.0441%	15	

### Qualifiers:

ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** Winzler and Kelly  
**Work Order:** 0605363  
**Project:** 00H2803.11400 BLFP

**QC SUMMARY REPORT**  
Laboratory Control Spike

Sample ID	LCS-06297	Batch ID: R41305	Test Code: BTXEW	Units: µg/L	Analysis Date	5/16/06 7:38:18 PM	Prep Date				
Client ID:			Run ID: ORGC8_060516C		SeqNo: 592755						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	45.64	3.0	40.0	0	114%	85	115	0			
Benzene	5.191	0.50	5.00	0	104%	85	115	0			
Toluene	5.696	0.50	5.00	0	114%	85	115	0			
Ethylbenzene	5.512	0.50	5.00	0	110%	85	115	0			
m,p-Xylene	10.94	0.50	10.0	0	109%	85	115	0			
o-Xylene	5.469	0.50	5.00	0	109%	85	115	0			
Cis-1,2-Dichloroethylene	1.10	0.10	1.00	0	110%	85	115	0			

Sample ID	LCSD-06297	Batch ID: R41305	Test Code: BTXEW	Units: µg/L	Analysis Date	5/16/06 8:13:35 PM	Prep Date				
Client ID:			Run ID: ORGC8_060516C		SeqNo:	592756					
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	45.04	3.0	40.0	0	113%	85	115	45.6	1.34%	15	
Benzene	5.175	0.50	5.00	0	103%	85	115	5.19	0.311%	15	
Toluene	5.396	0.50	5.00	0	108%	85	115	5.70	5.40%	15	
Ethylbenzene	5.360	0.50	5.00	0	107%	85	115	5.51	2.79%	15	
m,p-Xylene	10.61	0.50	10.0	0	106%	85	115	10.9	3.06%	15	
o-Xylene	5.324	0.50	5.00	0	106%	85	115	5.47	2.69%	15	
Cis-1,2-Dichloroethylene	1.13	0.10	1.00	0	113%	85	115	1.10	2.19%	15	

Sample ID	LCS-15750	Batch ID: 15750	Test Code: SGTPDMS	Units: µg/g	Analysis Date	5/24/06 12:28:07 PM	Prep Date	5/19/06			
Client ID:			Run ID: ORGC5_060524A		SeqNo: 595101						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	6.830	1.0	10.0	0	68.3%	29	111	0			B
TPHC Motor Oil	13.28	10	20.0	0	66.4%	46	114	0			

**Qualifiers:**
ND - Not Detected at the Reporting Limit
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

**CLIENT:** Winzler and Kelly  
**Work Order:** 0605363  
**Project:** 00H2803.11400 BLFP

**QC SUMMARY REPORT**  
Laboratory Control Spike Duplicate

Sample ID	LCSD-15750	Batch ID: 15750	Test Code: SGTPDMS	Units: µg/g	Analysis Date 5/24/06 12:50:56 PM	Prep Date 5/19/06						
Client ID:			Run ID: ORGC5_060524A		SeqNo: 595102							
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)		4.840	1.0	10.0	0	48.4%	29	111	6.83	34.1%	15	BR
TPHC Motor Oil		11.83	10	20.0	0	59.2%	46	114	13.3	11.5%	15	
Sample ID	LCS-15749	Batch ID: 15749	Test Code: SGTPDMW	Units: µg/L	Analysis Date 5/22/06 1:25:54 PM	Prep Date 5/19/06						
Client ID:			Run ID: ORGC5_060522A		SeqNo: 594557							
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)		419.9	50	500	47.6	74.4%	46	91	0			
TPHC Motor Oil		920.0	170	1,000	65.0	85.5%	48	113	0			
Sample ID	LCS-15713-G	Batch ID: 15713	Test Code: TPHCGS	Units: µg/g	Analysis Date 5/17/06 2:39:27 AM	Prep Date 5/16/06						
Client ID:			Run ID: ORGC8_060516D		SeqNo: 592804							
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)		11.22	1.0	10.0	0	112%	102	128	0			
Sample ID	LCSD-15713-G	Batch ID: 15713	Test Code: TPHCGS	Units: µg/g	Analysis Date 5/17/06 3:14:23 AM	Prep Date 5/16/06						
Client ID:			Run ID: ORGC8_060516D		SeqNo: 592805							
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)		10.91	1.0	10.0	0	109%	102	128	11.2	2.74%	15	
Sample ID	LCS-06298	Batch ID: R41303	Test Code: TPHCGW	Units: µg/L	Analysis Date 5/16/06 8:48:52 PM	Prep Date						
Client ID:			Run ID: ORGC8_060516A		SeqNo: 592748							
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)		484.8	50	500	0	97.0%	85	115	0			

**Qualifiers:**
ND - Not Detected at the Reporting Limit
S - Spike Recovery outside accepted recovery limits
B - Analyte detected in the associated Method Blank
J - Analyte detected below quantitation limits
R - RPD outside accepted recovery limits

CLIENT: Winzler and Kelly

Work Order: 0605363

Project: 00H2803.11400 BLFP

## QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID	LCSD-06298	Batch ID: R41303	Test Code: TPHCGW	Units: µg/L	Analysis Date	5/16/06 9:24:05 PM	Prep Date
Client ID:		Run ID:	ORGC8_060516A		SeqNo:	592749	
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit HighLimit RPD Ref Val %RPD RPDLimit Qual

TPHC Gas (C6-C14)	486.6	50	500	0	97.3%	85	115	485	0.354%	15
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Sample ID	LCS-15727	Batch ID: 15727	Test Code: TPHDMS	Units: µg/g	Analysis Date	5/18/06 5:48:22 PM	Prep Date
Client ID:		Run ID:	ORGC7_060518B		SeqNo:	593974	5/17/06

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	11.00	1.0	10.0	0	110%	70	130	0			
TPHC Motor Oil	20.70	10	20.0	0	103%	70	130	0			

Sample ID	LCSD-15727	Batch ID: 15727	Test Code: TPHDMS	Units: µg/g	Analysis Date	5/18/06 6:08:56 PM	Prep Date
Client ID:		Run ID:	ORGC7_060518B		SeqNo:	593975	5/17/06

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	8.812	1.0	10.0	0	88.1%	70	130	11.0	22.1%	15	R
TPHC Motor Oil	19.06	10	20.0	0	95.3%	70	130	20.7	8.21%	15	

Sample ID	LCS-15711	Batch ID: 15711	Test Code: TPHDMW	Units: µg/L	Analysis Date	5/16/06 3:16:01 PM	Prep Date
Client ID:		Run ID:	ORGC7_060516A		SeqNo:	592718	5/16/06

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	416.3	50	500	0	83.3%	72	124	0			
TPHC Motor Oil	1 227	170	1 000	0	123%	71	139	0			

Sample ID	LCSD-15711	Batch ID: 15711	Test Code: TPHDMW	Units: µg/L	Analysis Date	5/16/06 3:36:39 PM	Prep Date
Client ID:		Run ID:	ORGC7_060516A		SeqNo:	592719	5/16/06

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	373.2	50	500	0	74.6%	72	124	416	10.9%	15	
TPHC Motor Oil	966.5	170	1,000	0	96.6%	71	139	1,230	23.8%	15	R

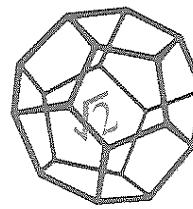
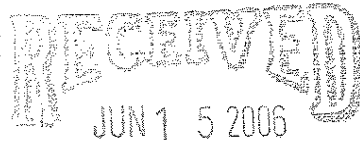
Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank







**NORTH COAST  
LABORATORIES LTD.**

June 08, 2006

WK - EUREKA

Winzler and Kelly  
633 Third Street  
Eureka, CA 95501

Attn: Colleen Ellis

RE: 00142803.11400 Blue Lake Forest Products

Order No.: 0605418

Invoice No.: 58677

PO No.:

ELAP No. 1247-Expires July 2006

**SAMPLE IDENTIFICATION**

Fraction Client Sample Description

01A	MW-16-5
01B	MW-16-5
02A	MW-16-10
02B	MW-16-10
03A	MW-16-15
03B	MW-16-15
04A	MW-16-20
04B	MW-16-20
05A	MW-15-5
05B	MW-15-5
06A	MW-15-10
06B	MW-15-10
07A	MW-15-15
07B	MW-15-15
08A	MW-15-20
08B	MW-15-20
09A	Rinsate Drum
09B	Rinsate Drum

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

**REPORT CERTIFIED BY**

*Colleen Blackstone* *T. Sh*

Laboratory Supervisor(s)

QA Unit

*Jesse G. Chaney, Jr.* (For JLC)

Jesse G. Chaney, Jr.  
Laboratory Director

**CLIENT:** Winzler and Kelly  
**Project:** 00142803.11400 Blue Lake Forest Products  
**Lab Order:** 0605418

**CASE NARRATIVE**

All samples submitted for a silica gel cleanup were initially analyzed for diesel/motor oil. The samples showing no detectable levels of the analytes were not subjected to the cleanup procedure.

TPH as Diesel/Motor Oil w/ Silica Gel Cleanup - Soil:

Sample MW-15-10 contains material similar to degraded or weathered diesel oil.

Sample MW-15-10 does not have the typical pattern of fresh motor oil. However, the result reported represents the amount of material in the motor oil range.

TPH as Diesel/Motor Oil - Water:

Sample Rinsate Drum contains material in the diesel range of molecular weights, but the material does not exhibit the peak pattern typical of diesel oil.

BTEX - Soil:

Sample MW-15-10 was diluted and some reporting limits were raised additionally due to matrix interference. This sample is also being reported as not detected (ND) with a dilution for some analytes due to matrix interference.

TPH as Gasoline - Soil:

Sample MW-15-10 does not present a peak pattern consistent with that of gasoline. The reported result represents the amount of material in the gasoline range.

Sample MW-15-20 does not present a peak pattern consistent with that of gasoline. The peaks elute towards the end of the gasoline range. In our judgement the material appears to be a product heavier than gasoline. Due to the differences in the purging efficiency of these heavier materials the results may be variable. The reported result represents the amount of material in the gasoline range.

TPH as Gasoline - Water:

Sample Rinsate Drum does not present a peak pattern consistent with that of gasoline. The reported result represent the amount of material in the gasoline range.

Date: 08-Jun-06

WorkOrder: 0605418

## ANALYTICAL REPORT

Client Sample ID: MW-16-5

Received: 5/18/06

Collected: 5/17/06 11:10

Lab ID: 0605418-01A

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/25/06	5/26/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/25/06	5/26/06

Client Sample ID: MW-16-5

Received: 5/18/06

Collected: 5/17/06 11:10

Lab ID: 0605418-01B

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/30/06	5/30/06
Benzene	ND	0.0050	µg/g	1.0	5/30/06	5/30/06
Toluene	ND	0.0050	µg/g	1.0	5/30/06	5/30/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/30/06	5/30/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/30/06
o-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/30/06
Surrogate: Cis-1,2-Dichloroethylene	85.2	71.8-135	% Rec	1.0	5/30/06	5/30/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/30/06	5/30/06

Client Sample ID: MW-16-10

Received: 5/18/06

Collected: 5/17/06 11:20

Lab ID: 0605418-02A

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3550/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/30/06	6/6/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/30/06	6/6/06

Date: 08-Jun-06

WorkOrder: 0605418

## ANALYTICAL REPORT

Client Sample ID: MW-16-10

Received: 5/18/06

Collected: 5/17/06 11:20

Lab ID: 0605418-02B

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/30/06	5/31/06
Benzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Toluene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
o-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Surrogate: Cis-1,2-Dichloroethylene	85.9	71.8-135	% Rec	1.0	5/30/06	5/31/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/30/06	5/31/06

Client Sample ID: MW-16-15

Received: 5/18/06

Collected: 5/17/06 11:29

Lab ID: 0605418-03A

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/25/06	5/26/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/25/06	5/26/06

Client Sample ID: MW-16-15

Received: 5/18/06

Collected: 5/17/06 11:29

Lab ID: 0605418-03B

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/30/06	5/31/06
Benzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Toluene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
o-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Surrogate: Cis-1,2-Dichloroethylene	86.4	71.8-135	% Rec	1.0	5/30/06	5/31/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/30/06	5/31/06

Date: 08-Jun-06

WorkOrder: 0605418

## ANALYTICAL REPORT

Client Sample ID: MW-16-20

Received: 5/18/06

Collected: 5/17/06 11:40

Lab ID: 0605418-04A

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/25/06	5/26/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/25/06	5/26/06

Client Sample ID: MW-16-20

Received: 5/18/06

Collected: 5/17/06 11:40

Lab ID: 0605418-04B

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/30/06	5/31/06
Benzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Toluene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
o-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Surrogate: Cis-1,2-Dichloroethylene	88.6	71.8-135	% Rec	1.0	5/30/06	5/31/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/30/06	5/31/06

Client Sample ID: MW-15-5

Received: 5/18/06

Collected: 5/17/06 15:06

Lab ID: 0605418-05A

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/25/06	5/26/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/25/06	5/26/06

Date: 08-Jun-06  
WorkOrder: 0605418

## ANALYTICAL REPORT

Client Sample ID: MW-15-5  
Lab ID: 0605418-05B

Received: 5/18/06

Collected: 5/17/06 15:06

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/30/06	5/31/06
Benzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Toluene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
o-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Surrogate: Cis-1,2-Dichloroethylene	87.8	71.8-135	% Rec	1.0	5/30/06	5/31/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/30/06	5/31/06

Client Sample ID: MW-15-10  
Lab ID: 0605418-06A

Received: 5/18/06

Collected: 5/17/06 15:14

Test Name: TPH as Diesel/Motor Oil w/ Silica Gel Cleanup

Reference: EPA 3550/3630/GCFID(LUFT)/8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	950	25	µg/g	25	5/30/06	6/6/06
TPHC Motor Oil	130	100	µg/g	10	5/30/06	6/6/06

Client Sample ID: MW-15-10  
Lab ID: 0605418-06B

Received: 5/18/06

Collected: 5/17/06 15:14

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.50	µg/g	10	5/30/06	5/30/06
Benzene	ND	0.050	µg/g	10	5/30/06	5/30/06
Toluene	ND	4.0	µg/g	100	5/30/06	5/30/06
Ethylbenzene	ND	10	µg/g	100	5/30/06	5/30/06
m,p-Xylene	ND	5.0	µg/g	100	5/30/06	5/30/06
o-Xylene	ND	10	µg/g	100	5/30/06	5/30/06
Surrogate: Cis-1,2-Dichloroethylene	84.8	71.8-135	% Rec	10	5/30/06	5/30/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	830	100	µg/g	100	5/30/06	5/30/06

Date: 08-Jun-06

WorkOrder: 0605418

## ANALYTICAL REPORT

Client Sample ID: MW-15-15

Received: 5/18/06

Collected: 5/17/06 15:20

Lab ID: 0605418-07A

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/25/06	5/26/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/25/06	5/26/06

Client Sample ID: MW-15-15

Received: 5/18/06

Collected: 5/17/06 15:20

Lab ID: 0605418-07B

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/30/06	5/31/06
Benzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Toluene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
o-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Surrogate: Cis-1,2-Dichloroethylene	86.1	71.8-135	% Rec	1.0	5/30/06	5/31/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	ND	1.0	µg/g	1.0	5/30/06	5/31/06

Client Sample ID: MW-15-20

Received: 5/18/06

Collected: 5/17/06 15:30

Lab ID: 0605418-08A

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3550/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	ND	1.0	µg/g	1.0	5/25/06	5/26/06
TPHC Motor Oil	ND	10	µg/g	1.0	5/25/06	5/26/06

Date: 08-Jun-06  
WorkOrder: 0605418

## ANALYTICAL REPORT

Client Sample ID: MW-15-20  
Lab ID: 0605418-08B

Received: 5/18/06

Collected: 5/17/06 15:30

Test Name: BTEX

Reference: EPA 5035/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	0.050	µg/g	1.0	5/30/06	5/31/06
Benzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Toluene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Ethylbenzene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
m,p-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
o-Xylene	ND	0.0050	µg/g	1.0	5/30/06	5/31/06
Surrogate: Cis-1,2-Dichloroethylene	88.4	71.8-135	% Rec	1.0	5/30/06	5/31/06

Test Name: TPH as Gasoline

Reference: EPA 5035/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	4.1	1.0	µg/g	1.0	5/30/06	5/31/06

Client Sample ID: Rinsate Drum  
Lab ID: 0605418-09A

Received: 5/18/06

Collected: 5/17/06 16:30

Test Name: BTEX

Reference: EPA 5030/EPA 8021B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
MTBE	ND	3.0	µg/L	1.0		5/22/06
Benzene	ND	0.50	µg/L	1.0		5/22/06
Toluene	ND	0.50	µg/L	1.0		5/22/06
Ethylbenzene	ND	0.50	µg/L	1.0		5/22/06
m,p-Xylene	ND	0.50	µg/L	1.0		5/22/06
o-Xylene	ND	0.50	µg/L	1.0		5/22/06
Surrogate: Cis-1,2-Dichloroethylene	88.4	85-115	% Rec	1.0		5/22/06

Test Name: TPH as Gasoline

Reference: EPA 5030/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Gas (C6-C14)	73	50	µg/L	1.0		5/22/06

Client Sample ID: Rinsate Drum  
Lab ID: 0605418-09B

Received: 5/18/06

Collected: 5/17/06 16:30

Test Name: TPH as Diesel/Motor Oil

Reference: EPA 3510/GCFID(LUFT)/EPA 8015B

<u>Parameter</u>	<u>Result</u>	<u>Limit</u>	<u>Units</u>	<u>DF</u>	<u>Extracted</u>	<u>Analyzed</u>
TPHC Diesel (C12-C22)	210	50	µg/L	1.0	5/23/06	5/25/06
TPHC Motor Oil	ND	170	µg/L	1.0	5/23/06	5/25/06



# North Coast Laboratories, Ltd.

Date: 08-Jun-06

CLIENT: Winzler and Kelly

Work Order: 0605418

Project: 00142803.11400 Blue Lake Forest Products

## QC SUMMARY REPORT

Method Blank

Sample ID	MB-15802	Batch ID: 15802	Test Code: BTXES	Units: µg/g	Analysis Date	5/30/06 5:55:04 PM	Prep Date	5/30/06			
Client ID:			Run ID: ORGC8_060530B		SeqNo: 596716						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	0.050									
Benzene	ND	0.0050									
Toluene	ND	0.0050									
Ethylbenzene	ND	0.0050									
m,p-Xylene	ND	0.0050									
o-Xylene	ND	0.0050									
Cis-1,2-Dichloroethylene	0.889	0.10	1.00	0	88.9%	72	135	0			

Sample ID	MB-5/22/06	Batch ID: R41428	Test Code: BTXEW	Units: µg/L	Analysis Date	5/22/06 9:41:04 PM	Prep Date				
Client ID:			Run ID: ORGC8_060522B		SeqNo:	594542					
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	3.0									
Benzene	ND	0.50									
Toluene	0.1590	0.50									J
Ethylbenzene	ND	0.50									
m,p-Xylene	0.1812	0.50									J
o-Xylene	ND	0.50									
Cis-1,2-Dichloroethylene	0.877	0.10	1.00	0	87.7%	85	115	0			

Sample ID	MB-15799	Batch ID: 15799	Test Code: SGTPDMS	Units: µg/g	Analysis Date	6/6/06 5:46:57 AM	Prep Date	5/30/06			
Client ID:			Run ID: ORGC5_060606A		SeqNo:	597993					
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	0.4913	1.0									
TPHC Motor Oil	ND	10									J

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

CLIENT: Winzler and Kelly

Work Order: 0605418

Project: 00142803.11400 Blue Lake Forest Products

## QC SUMMARY REPORT

Method Blank

Sample ID	MB-15802	Batch ID: 15802	Test Code: TPHCGS	Units: µg/g	Analysis Date	5/30/06 5:55:04 PM	Prep Date	5/30/06				
Client ID:			Run ID: ORGC8_060530A		SeqNo:	596687						
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)		0.4854	1.0									J

Sample ID	MB-5/22/06	Batch ID: R41427	Test Code: TPHCGW	Units: µg/L	Analysis Date	5/22/06 9:41:04 PM	Prep Date					
Client ID:			Run ID: ORGC8_060522A		SeqNo:	594530						
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)		ND	50									

Sample ID	MB-15775	Batch ID: 15775	Test Code: TPHDMS	Units: µg/g	Analysis Date	5/26/06 4:32:00 PM	Prep Date	5/25/06				
Client ID:			Run ID: ORGC7_060526B		SeqNo:	596589						
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)		ND	1.0									
TPHC Motor Oil		ND	10									

Sample ID	MB-15769	Batch ID: 15769	Test Code: TPHDMW	Units: µg/L	Analysis Date	5/25/06 12:26:56 AM	Prep Date	5/23/06				
Client ID:			Run ID: ORGC7_060524B		SeqNo:	595237						
Analyte		Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)		ND	50									
TPHC Motor Oil		ND	170									

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

# North Coast Laboratories, Ltd.

Date: 08-Jun-06

CLIENT: Winzler and Kelly

Work Order: 0605418

Project: 00142803.11400 Blue Lake Forest Products

## QC SUMMARY REPORT

Laboratory Control Spike

Sample ID	LCS-15802	Batch ID: 15802	Test Code: BTXES	Units: µg/g	Analysis Date 5/31/06 5:04:38 AM	Prep Date 5/30/06					
Client ID:			Run ID: ORGC8_060530B		SeqNo: 596737						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	0.3442	0.050	0.400	0	86.1%	75	124	0			
Benzene	0.04565	0.0050	0.0500	0	91.3%	80	128	0			
Toluene	0.04861	0.0050	0.0500	0	97.2%	85	126	0			
Ethylbenzene	0.04807	0.0050	0.0500	0	96.1%	80	126	0			
m,p-Xylene	0.09234	0.0050	0.100	0	92.3%	84	130	0			
o-Xylene	0.04683	0.0050	0.0500	0	93.7%	84	125	0			
Cis-1,2-Dichloroethylene	0.961	0.10	1.00	0	96.1%	72	135	0			

Sample ID	LCSD-15802	Batch ID: 15802	Test Code: BTXES	Units: µg/g	Analysis Date 5/31/06 5:39:16 AM	Prep Date 5/30/06					
Client ID:			Run ID: ORGC8_060530B		SeqNo: 596738						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	0.3364	0.050	0.400	0	84.1%	75	124	0.344	2.31%	15	
Benzene	0.04442	0.0050	0.0500	0	88.8%	80	128	0.0457	2.72%	15	
Toluene	0.04742	0.0050	0.0500	0	94.8%	85	126	0.0486	2.49%	15	
Ethylbenzene	0.04729	0.0050	0.0500	0	94.6%	80	126	0.0481	1.64%	15	
m,p-Xylene	0.09100	0.0050	0.100	0	91.0%	84	130	0.0923	1.46%	15	
o-Xylene	0.04593	0.0050	0.0500	0	91.9%	84	125	0.0468	1.94%	15	
Cis-1,2-Dichloroethylene	0.958	0.10	1.00	0	95.8%	72	135	0.961	0.228%	15	

### Qualifiers:

ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** Winzler and Kelly

**Work Order:** 0605418

**Project:** 00142803.11400 Blue Lake Forest Products

# QC SUMMARY REPORT

Laboratory Control Spike

Sample ID	LCS-06316	Batch ID: R41428	Test Code: BTXEW	Units: µg/L	Analysis Date	5/22/06 4:49:07 PM	Prep Date				
Client ID:		Run ID: ORGC8_060522B			SeqNo: 594539						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD RefVal	%RPD	RPDLimit	Qual
MTBE	38.54	3.0	40.0	0	96.4%	85	115	0			
Benzene	4.459	0.50	5.00	0	89.2%	85	115	0			
Toluene	4.681	0.50	5.00	0	93.6%	85	115	0			
Ethylbenzene	4.630	0.50	5.00	0	92.6%	85	115	0			
m,p-Xylene	9.581	0.50	10.0	0	95.8%	85	115	0			
o-Xylene	4.824	0.50	5.00	0	96.5%	85	115	0			
Cis-1,2-Dichloroethylene	1.06	0.10	1.00	0	107%	85	115	0			

Sample ID	LCSD-06316	Batch ID: R41428	Test Code: BTXEW	Units: µg/L	Analysis Date	5/22/06 5:25:49 PM	Prep Date				
Client ID:		Run ID: ORGC8_060522B			SeqNo: 594540						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	38.85	3.0	40.0	0	97.1%	85	115	38.5	0.785%	15	
Benzene	4.401	0.50	5.00	0	88.0%	85	115	4.46	1.30%	15	
Toluene	4.598	0.50	5.00	0	92.0%	85	115	4.68	1.78%	15	
Ethylbenzene	4.568	0.50	5.00	0	91.4%	85	115	4.63	1.34%	15	
m,p-Xylene	9.475	0.50	10.0	0	94.7%	85	115	9.58	1.12%	15	
o-Xylene	4.738	0.50	5.00	0	94.8%	85	115	4.82	1.79%	15	
Cis-1,2-Dichloroethylene	1.04	0.10	1.00	0	104%	85	115	1.06	1.93%	15	

Sample ID	LCS-15799	Batch ID: 15799	Test Code: SGTPDMS	Units: µg/g	Analysis Date	6/6/06 3:01:38 AM	Prep Date	5/30/06			
Client ID:		Run ID: ORGC5_060606A			SeqNo: 597991						
Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	7.863	1.0	10.0	0	78.6%	29	111	0			
TPHC Motor Oil	15.55	10	20.0	0	77.7%	46	114	0			

**Qualifiers:** ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

**CLIENT:** Winzler and Kelly

**Work Order:** 0605418

**Project:** 00142803.11400 Blue Lake Forest Products

## QC SUMMARY REPORT

Laboratory Control Spike Duplicate

Sample ID	LCSD-15799	Batch ID:	15799	Test Code:	SGTPDMS	Units:	µg/g	Analysis Date	6/6/06 3:48:50 AM	Prep Date	5/30/06
Client ID:		Run ID:		Run ID:	ORG5_060606A			SeqNo:	597992		

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	6.897	1.0	10.0	0	69.0%	29	111	7.86	13.1%		15
TPHC Motor Oil	13.47	10	20.0	0	67.3%	46	114	15.6	14.3%		15

Sample ID	LCS-15802-G	Batch ID:	15802	Test Code:	TPHCGS	Units:	µg/g	Analysis Date	5/31/06 6:48:33 AM	Prep Date	5/30/06
Client ID:		Run ID:		Run ID:	ORG8_060530A			SeqNo:	596702		

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	10.79	1.0	10.0	0	108%	102	128	0			

Sample ID	LCSD-15802-G	Batch ID:	15802	Test Code:	TPHCGS	Units:	µg/g	Analysis Date	5/31/06 7:23:10 AM	Prep Date	5/30/06
Client ID:		Run ID:		Run ID:	ORG8_060530A			SeqNo:	596703		

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	11.36	1.0	10.0	0	114%	102	128	10.8	5.08%		15

Sample ID	LCS-06317	Batch ID:	R41427	Test Code:	TPHCGW	Units:	µg/L	Analysis Date	5/22/06 7:15:36 PM	Prep Date	
Client ID:		Run ID:		Run ID:	ORG8_060522A			SeqNo:	594527		

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	454.0	50	500	0	90.8%	85	115	0			

Sample ID	LCSD-06317	Batch ID:	R41427	Test Code:	TPHCGW	Units:	µg/L	Analysis Date	5/22/06 7:52:02 PM	Prep Date	
Client ID:		Run ID:		Run ID:	ORG8_060522A			SeqNo:	594528		

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	457.8	50	500	0	91.6%	85	115	454	0.832%		15

<b>Qualifiers:</b>	ND - Not Detected at the Reporting Limit	S - Spike Recovery outside accepted recovery limits	B - Analyte detected in the associated Method Blank
	J - Analyte detected below quantitation limits	R - RPD outside accepted recovery limits	

CLIENT: Winzler and Kelly

Work Order: 0605418

Project: 00142803.11400 Blue Lake Forest Products

## QC SUMMARY REPORT

Laboratory Control Spike

Sample ID LCS-15775 Batch ID: 15775 Test Code: TPHDMS Units: µg/g Analysis Date 5/26/06 2:30:01 PM Prep Date 5/25/06  
Client ID: Run ID: ORGC7\_060526B SeqNo: 596586

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	11.87	1.0	10.0	0	119%	70	130	0			
TPHC Motor Oil	22.42	10	20.0	0	112%	70	130	0			

Sample ID LCSD-15775 Batch ID: 15775 Test Code: TPHDMS Units: µg/g Analysis Date 5/26/06 2:50:39 PM Prep Date 5/25/06  
Client ID: Run ID: ORGC7\_060526B SeqNo: 596587

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	10.93	1.0	10.0	0	109%	70	130	11.9	8.18%	15	
TPHC Motor Oil	22.78	10	20.0	0	114%	70	130	22.4	1.62%	15	

Sample ID LCS-15769 Batch ID: 15769 Test Code: TPHDMW Units: µg/L Analysis Date 5/24/06 9:03:48 PM Prep Date 5/23/06  
Client ID: Run ID: ORGC7\_060524B SeqNo: 595234

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	463.9	50	500	0	92.8%	72	124	0			
TPHC Motor Oil	1,065	170	1,000	0	106%	71	139	0			

Sample ID LCSD-15769 Batch ID: 15769 Test Code: TPHDMW Units: µg/L Analysis Date 5/24/06 9:24:03 PM Prep Date 5/23/06  
Client ID: Run ID: ORGC7\_060524B SeqNo: 595235

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Diesel (C12-C22)	454.1	50	500	0	90.8%	72	124	464	2.13%	15	
TPHC Motor Oil	1,050	170	1,000	0	105%	71	139	1,060	1.41%	15	

Qualifiers: ND - Not Detected at the Reporting Limit  
J - Analyte detected below quantitation limits

S - Spike Recovery outside accepted recovery limits  
R - RPD outside accepted recovery limits

B - Analyte detected in the associated Method Blank

# Chain of Custody

10

## LABORATORY NUMBER:

Attention: Colleen Ellis  
Results & Invoice to: Wynston & Kelly  
Address: 633 Third St.  
Guerre, CA 95501  
Phone: 443-8326  
Copies of Report to: \_\_\_\_\_  
Sampler (Sign & Print): Wynston

## PROJECT INFORMATION

Project Number: 00142805.11400  
Project Name: Blue Lake Forest Products  
Purchase Order Number:

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*
	MW-16-5	5/17/06	11:10	SOIL
	MW-16-10		11:20	
	MW-16-15		11:29	
	MW-16-20		11:40	
	MW-15-5		3:06	
	MW-15-10		3:15	
	MW-15-15		3:20	
	MW-15-20		3:30	
	Rinsate Drum		4:30	H <sub>2</sub> O

ANALYSIS	CONTAINER	PRESERVATIVE
D/MO w/ silica	13	cold
G1 B7X	13	cold
<del>D/MO w/ silica</del>		
G1 B7X	9	#1/cold
D/MO	9	#1/cold

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5-7 Day  
☒ STD (2-3 Wk) ☐ Other:

PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

**REPORTING REQUIREMENTS:** State Forms ☐

Preliminary: FAX ☐ Verbal ☐ By:        /        /       

Final Report: FAX ☐ Verbal ☐ By:        /        /       

**CONTAINER CODES:** 1—1/2 gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

**PRESERVATIVE CODES:** a—HNO<sub>3</sub>; b—HCl; c—H<sub>2</sub>SO<sub>4</sub>;  
d—Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>; e—NaOH; f—C<sub>2</sub>H<sub>3</sub>O<sub>2</sub>Cl; g—other

### SAMPLE CONDITION/SPECIAL INSTRUCTIONS

# SAMPLE DISPOSAL

☐ NCL Disposal of Non-Contaminated

☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA ☐

SHIPPED VIA: UPS Air-Ex Fed-Ex Bus Hand

**\*MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT